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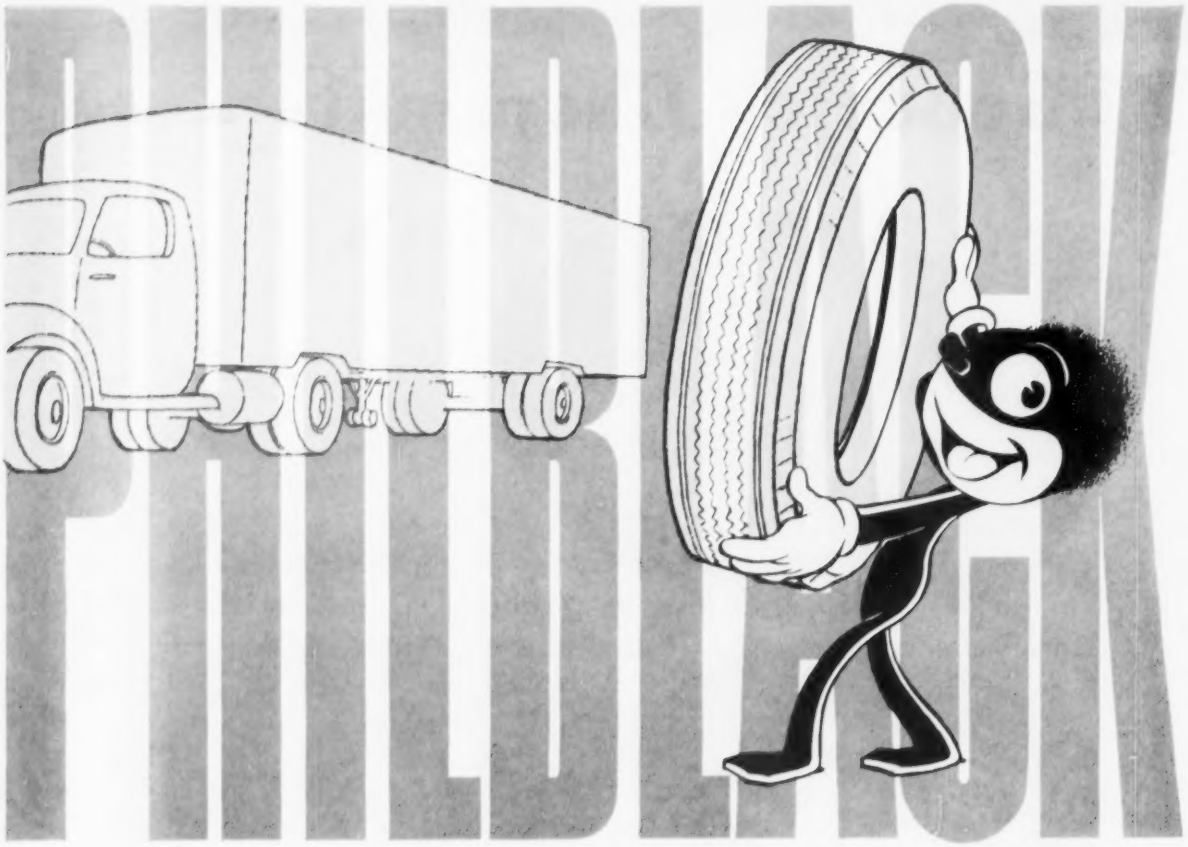

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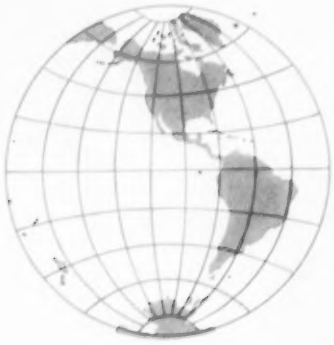

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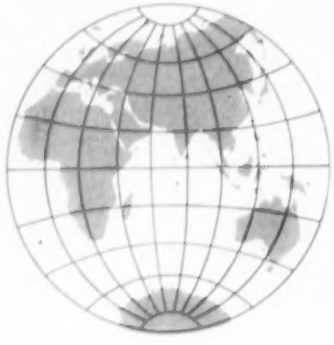

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AUGUST, 1957 VOL. 81 NO. 5

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*Appears every other month

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5107 Telegraph Road
Los Angeles 22, Calif.
Phone: Angelus 1-8136.

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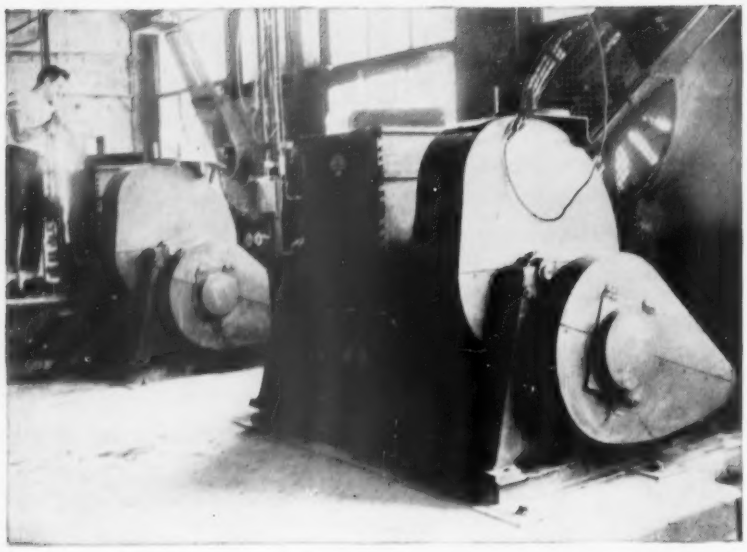

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Letters to the editor

The Fourth "R"

Dear Sir:

As a teacher in the public school system, I sometimes wonder whether the engineers, chemists, production people and others working with rubber are aware of the important role played by rubber in modern day schools. Safe, quiet, durable and warm to the touch, rubber and its many derivatives are evident in today's classrooms—for better living and learning. A glance about a modern school, in action, shows many ways in which rubber adds to the comfort and well-being of the children and adults therein.

Rubber toys, balls, and building blocks are always on hand. Teachers especially appreciate the rubber blocks, when a "tower" tumbles, amidst her directing another group in reading; rubber is silent, compared to noisy wooden blocks. For the teacher and other students, rubber is a big help in that incident. Rubber mats and pads offer rest to pupils on their wooden desk tops; they also serve in kneeling-for-art activities, and around the sink when much clean-up work goes on. Rubber "takes it" well, not ever showing the wear and tear of everyday classroom use.

Rubber cushions aid the children as they sit upon the floor, around the teacher for primary story-time. Trays-of-rubber rest upon the shelves, and clean easily and quickly; they hold countless items for work use, keeping the items from spilling or damaging surrounding furniture. Rubber coat hangers in the children's coatroom, offer no noise when handled or dropped. They do not injure if grasped or pulled quickly as children will often do. Various items for science experiments offer rubber as the material which will safely mix elements without danger. Rubber protects and endures.

Children who learn the first facts about rubber, especially the origin and early history, when Columbus saw the Indian natives playing with balls of crude rubber, and the great discovery of the vulcanization process, appreciate the almost endless list of present-day items of rubber, for their successful and careful living. They use old rubber inner tubing in art class to cut out block-printing stencils, and over a can as an Indian-type "tom-tom" for their music rhythm work.

Rubber tubing is a "must" in science experiments, siphoning out the water in the classroom aquarium and for preparing special plaster molded items. Rubber soles make for quieter classrooms as well as in dancing or dramas. Children become appreciative of rubber rainwear and exercise care in the use of such clothing.

Sink stoppers, bases of bowling pins used in athletics, and rubber tiles which beautify the modern school, all help to

Another first from Monsanto

SANTONOX . . . a low-cost method for stabilizing polyethylene during processing . . . and reducing "greasiness" of finished product.

With as little as .02% Santonox mixed in the batch, extrusions are practically identical to die orifice.

Versatile though it is, the ubiquitous polyethylene polymer gives the processor certain worries . . . one of which is a lively instability during extruding, blowing, and—to a less degree—during molding. Major trouble is caused by the heat applied in the mixing, milling, and pressuring to shape. Heat causes cross-linking or scission in the molecule. Cross-linking creates a host of headaches: a reduction of flexibility; discoloration; lowered melt flow. But more painful than these to the processor extruding cable insulation, heat-induced cross-linking causes troublesome "swelling" as the polyethylene extrudes through the orifice and the composition develops a higher electrical-dissipation factor.

Chemically, the remedy was at hand: 4,4'-thiobis-(6-tert-butyl-m-cresol), highly purified, trade named Santonox. Some collaborative study quickly proved how well it *stabilizes* general-purpose and electrical-grade polyethylene against heat degradation.

So little does the trick! Just 0.03% on the weight of the polymer. Checked by ASTM Flow Measurement D1238-52T, the melt index remains constant for the full 45-minute heating. By "Percent-Recovery" test, after 45 minutes of milling, polyethylene with 0.03% Santonox shows only a 5% increase in the index over the unmilled resin. Two other commercial antioxidants tested in parallel show 102% and 83% increases at the same concentration. And even at 1%, these antioxidants permitted an increase in the Percent-Recovery of 18% and 30%, respectively. On the electrical properties side, polyethylene with a concentration of 0.05% Santonox retains virtually the *same dissipation factor after 2½ hours' milling.*

This little that does so much contributes something still more: the presence of 0.03-0.05% Santonox prevents exudation from the surface. Consequently, finished products are noticeably less "waxy" or greasy to the touch.

The finely crystalline Santonox can be added by either the polyethylene user or the manufacturer of the molding compound. It has been approved by the FDA up to a level of 0.05% in high-pressure polyethylene.

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play the part of rubber. The erasers used daily by the pupils, and the rubber bands which have countless uses, are "standard items."

A quaint miniature rubber automobile tire, as an outer part of an ash-tray, seen by the pupils on their excursion about the school and office, oriented them into a study of the importance of rubber. Another class was studying jungle plants and discovered rubber that way. Still another group was concerned about rubber in the international situation; and it was in the current events news-items of the day. Many ways in the modern school, the children become "rubber-conscious"; every way, they derive an understanding of its lasting values, its care, and its contribution to American life, and to the world.

A primary grade class launched a rather successful art project using rubber jar rings brought in from their homes. Garbed in a rubberized fabric, to protect them from materials used, paints and other art media were employed to decorate the jar rings. At Christmas, the rings were entwined with evergreens as miniature wreaths. The rubber jar rings were painted and hung on the Christmas tree. Some were used for counting practice; some tossed upon a stick, much as horseshoes is played; others "corraled" chalks for grouping of tens in number study. Thus, the "lowly jar ring," a rubber object with such seemingly limited use, expanded into the curriculum for a worthwhile use.

Rubber is everywhere evident in the school of today. It often plays its role silently, but safely, quietly, and in a lasting manner. So important is it on the academic scene, that it could be truly hailed as the "fourth R," added to the traditional "three R's," in the curriculum!

RUTH K. STROH
13 Sherwood Road
Cockeysville, Md.

Thank You, Sir

Dear Sir:

I want to compliment you for the splendid coverage in RA for July, "Government Will Not Appeal Court Decision on F.T.C. Order." Your publication is to be commended on bringing to the attention of your national readers news you believe will be of importance as it applies to our domestic economy.

Our observation here (Washington) for nearly two decades is just this—that we have come to the conclusion that those trade publications which cover all the news which applies to the industry they serve are making an invaluable contribution in supplying the knowledge and information. Unfortunately for the good of all, we don't find this procedure being universally used by many trade publications.

GEORGE J. BURGER
National Federation of
Independent Business,
Washington Building,
Washington 5, D. C.

Above—Gauging the rough-ground body of a Banbury rotor.

Below—New liner in Banbury side gets a final gauging.

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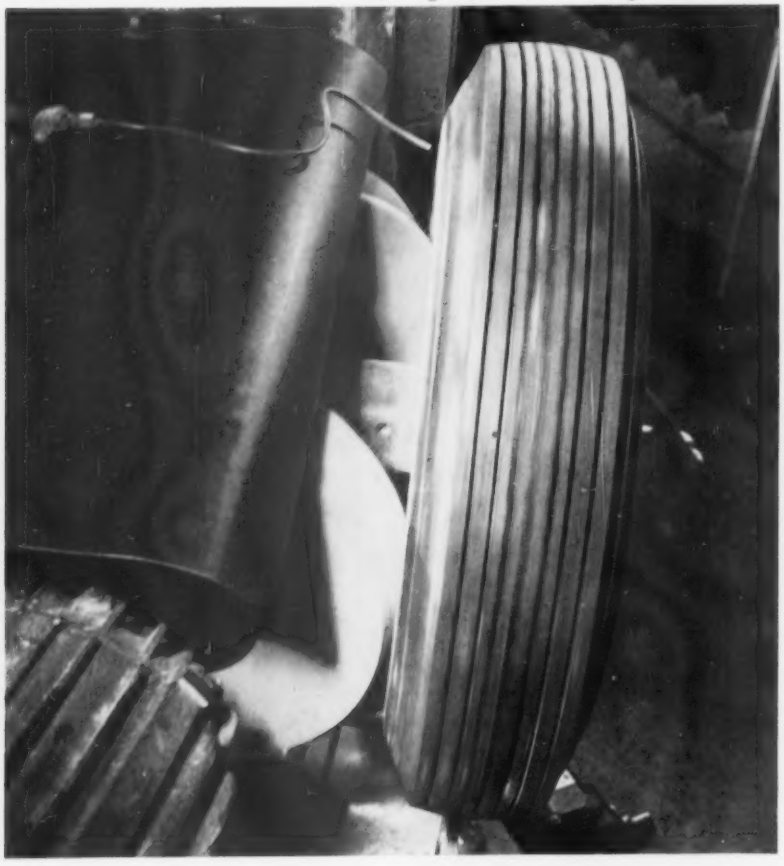

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Help, Help!

Dear Sir:

I have developed a product which uses air cells or floats, in combination with a collar or a bathing cap, as a means of supporting a swimmer in the water. I would like your assistance in finding a manufacturer with the "know how" to produce this air cell or float either as an inflatable air cell or as a float filled with rubber or plastic foam or as an air-tight aluminum stamping. The companies I have written to advised that it was not in their line of manufacture.

The floats are to be equipped with rings on each end. The volume displacement of each air cell should be about 144 cubic inches and should support about 5 pounds each underwater weight. The ring and tab should be strong enough to support about 50 pounds.

I would also like to contact a manufacturer who could make an aluminum chain-like collar with connecting hooks and short chains to be used for connecting the floats to each other and to a bathing cap or collar as desired. The idea is to have a pair of floats which can be adjusted to fit the neck and worn around the neck while floating or learning to swim or left to float behind the head while swimming.

The item described would make an ideal personal life preserver for any swimmer, and I would appreciate hearing from any companies interested in making the entire device or any part of it. Full details will be supplied to any such companies on request.

LAMAR T. JOHNS
Box 301, R.D.,
Pottsville, Penna.

(A sketch of the life preserver described above accompanied the letter. A brief examination indicated that the item had considerable merit and might well be worth attention on the part of some rubber manufacturer, particularly one concerned with bathing accessories.—ED).

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"sponginess"

under valve base

SOLUTION . . .

KURE-BLEND MT

This very problem faced a leading tire tube producer six months ago. The problem was completely solved by adding Kure-Blend MT during stock processing. Several others have proved the same benefits since. This curing problem could have been solved by increasing cure time ½—1 minute, but Kure-Blend solved it without any increase in time.

Kure-Blend®, a 50 GRS-50 TMTD latex-compounded masterbatch, provides faster, more even dispersion, thus allowing full advantage to be gained from TMTD used for acceleration.

Kure-Blend offers these additional advantages:

- **Faster, easier incorporation**
- **Can be more accurately weighed**
- **Indefinitely storage-stable**
- **No dusting**
- **Assures uniform cure**
- **No premium cost**

There's no need to increase cure time—just add Kure-Blend MT to be sure of tube cure!

For literature and samples, write to:

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Chemical Division

AKRON, OHIO

Creating Progress Through Chemistry

Chemical Division GENERAL THE GENERAL TIRE & RUBBER CO. KURE-BLEND®

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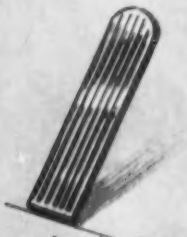
TILTING HEAD PRESS

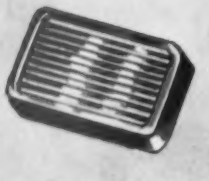
Molds Stay Put —
Operator Removes Work

Ventilator Seal

Caster Wheel



Accelerator Pedal



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The Tilting Head removes the strain of shifting, lifting and horsing heavy molds. Molds fasten to platen. Jaws open—operator removes work. Molds are filled—press closes. High unit platen pressure.

Above you see a few examples of articles now produced on Tilting Head Presses in use. You can adapt the Tilting Head for shallow, deep or transfer molding.

Write for illustrated folder or request showing of 16 mm film showing complete cycle operation. Address inquiry to: Hale and Kullgren, Inc., 613 E. Tallmadge Ave., Akron 10, Ohio.

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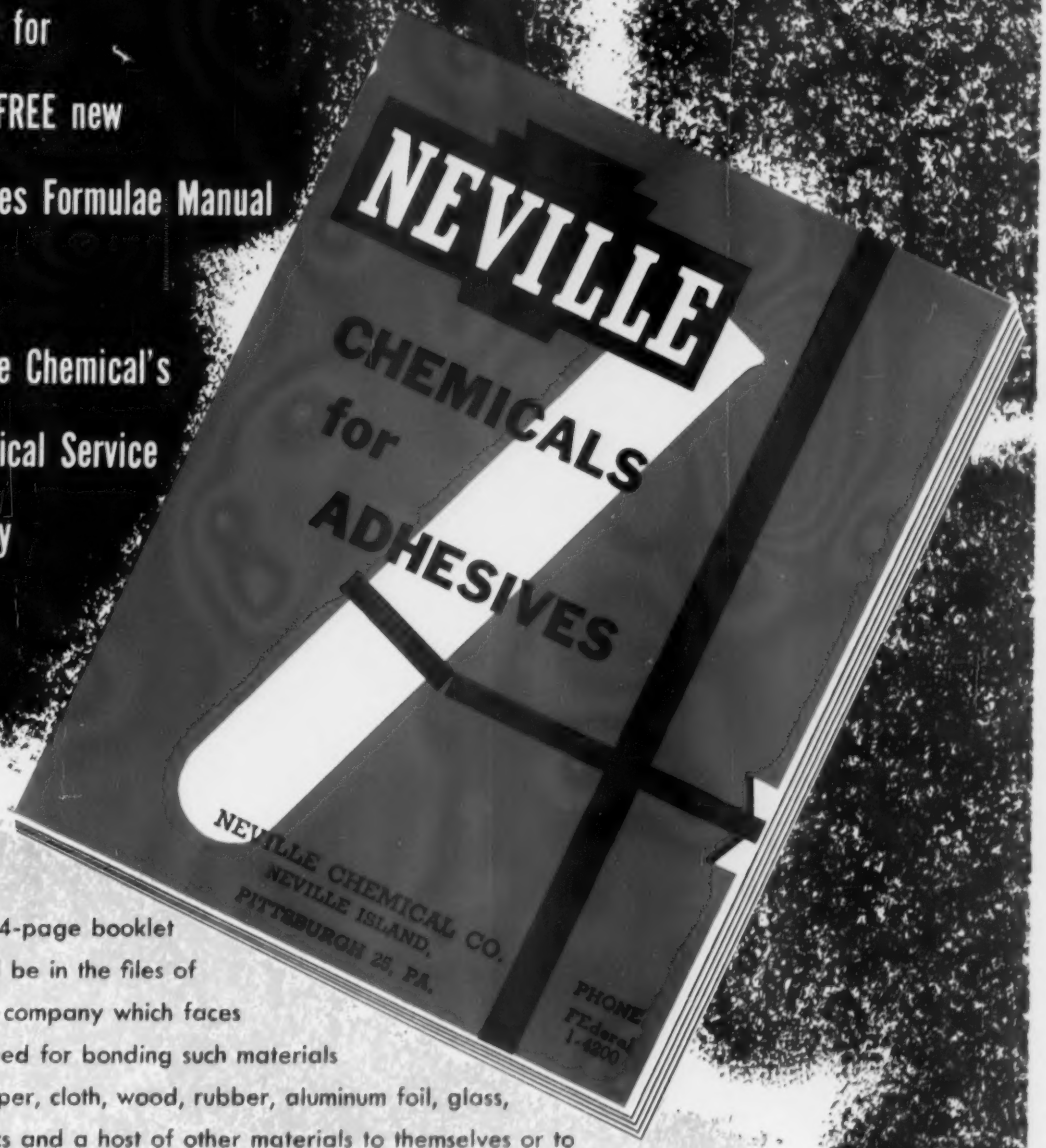

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This is another example of how fabrics made by Mount Vernon Mills, Inc. and the industries they serve, are serving America. Mount Vernon engineers and its laboratory facilities are available to help you in the development of any new fabric or in the application of those already available.

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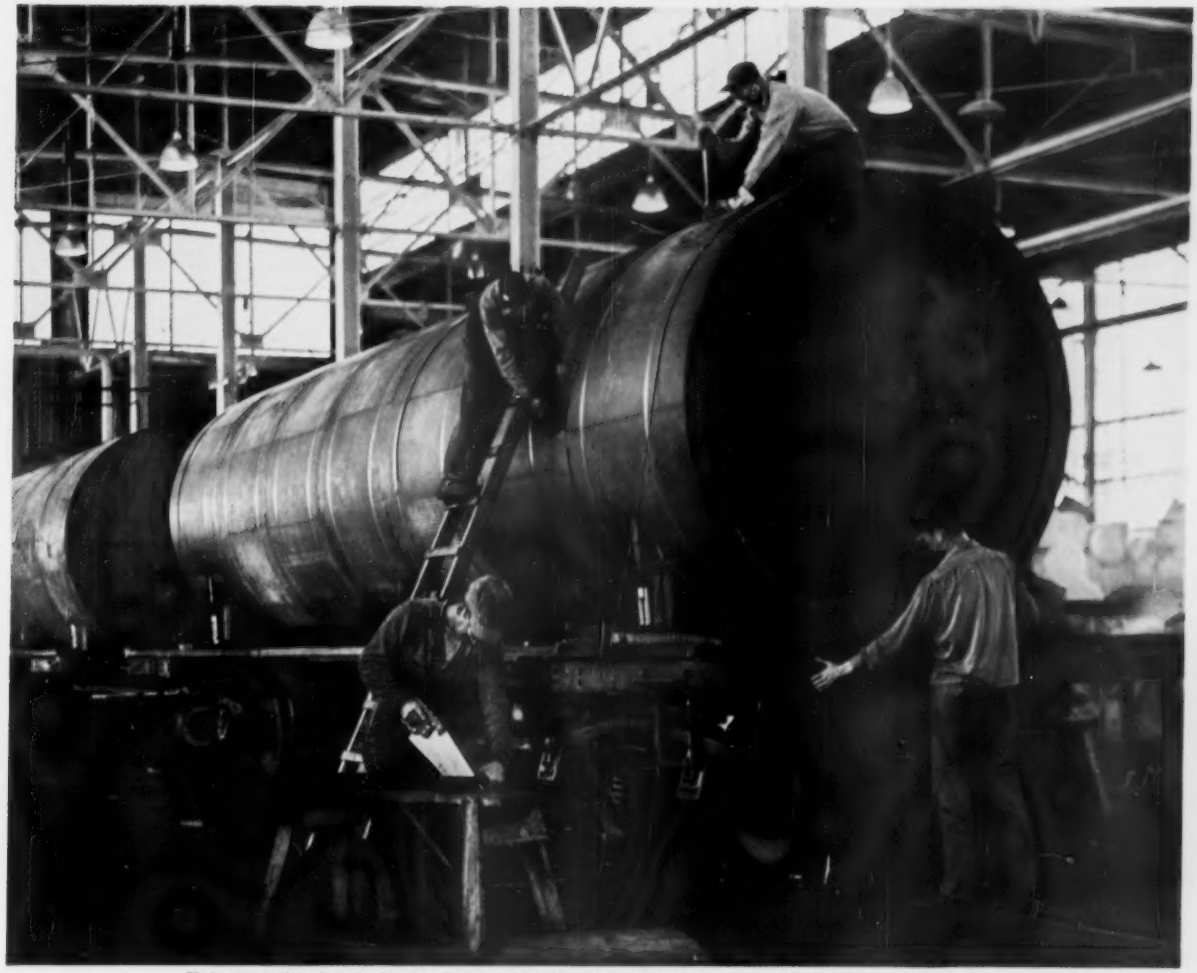

Photo courtesy Union Tank Car Company, Chicago, Illinois. Insulation hardboard supplied by Rubatex Division, Great American Industries, Inc., Bedford, Virginia

It cuts chilling costs to the bone

It's a cold fact: Proper insulation is the key to low-cost storage and transportation at low temperatures. Being applied above to liquid carbon dioxide cars is a lightweight hardboard made of expanded PLIOFLEX rubber which does a matchless job of efficiently and economically shutting cold, heat and moisture—in or out.

Millions of tiny, closed cells—filled with nitrogen and bound by tough hard rubber—give this board the lowest conductivity of any known structural material. It also is strong enough to be used in self-supporting construction, does not require a vapor barrier and can be easily cut to shape and installed.

When first introduced, this product was made from natural rubber. But wartime shortages caused a change to synthetic rubber which, because of its uniformity, soon proved to be much more satisfactory. PLIOFLEX is used today because of its unusually high uniformity and consistently low moisture content.

Just one of many uses for versatile PLIOFLEX is chemically blown insulation. How can you use this high-quality, "hot," "cold" or oil-extended rubber to advantage? Find out by writing for details to: Goodyear, Chemical Division, Dept. H-9419, Akron 16, Ohio.

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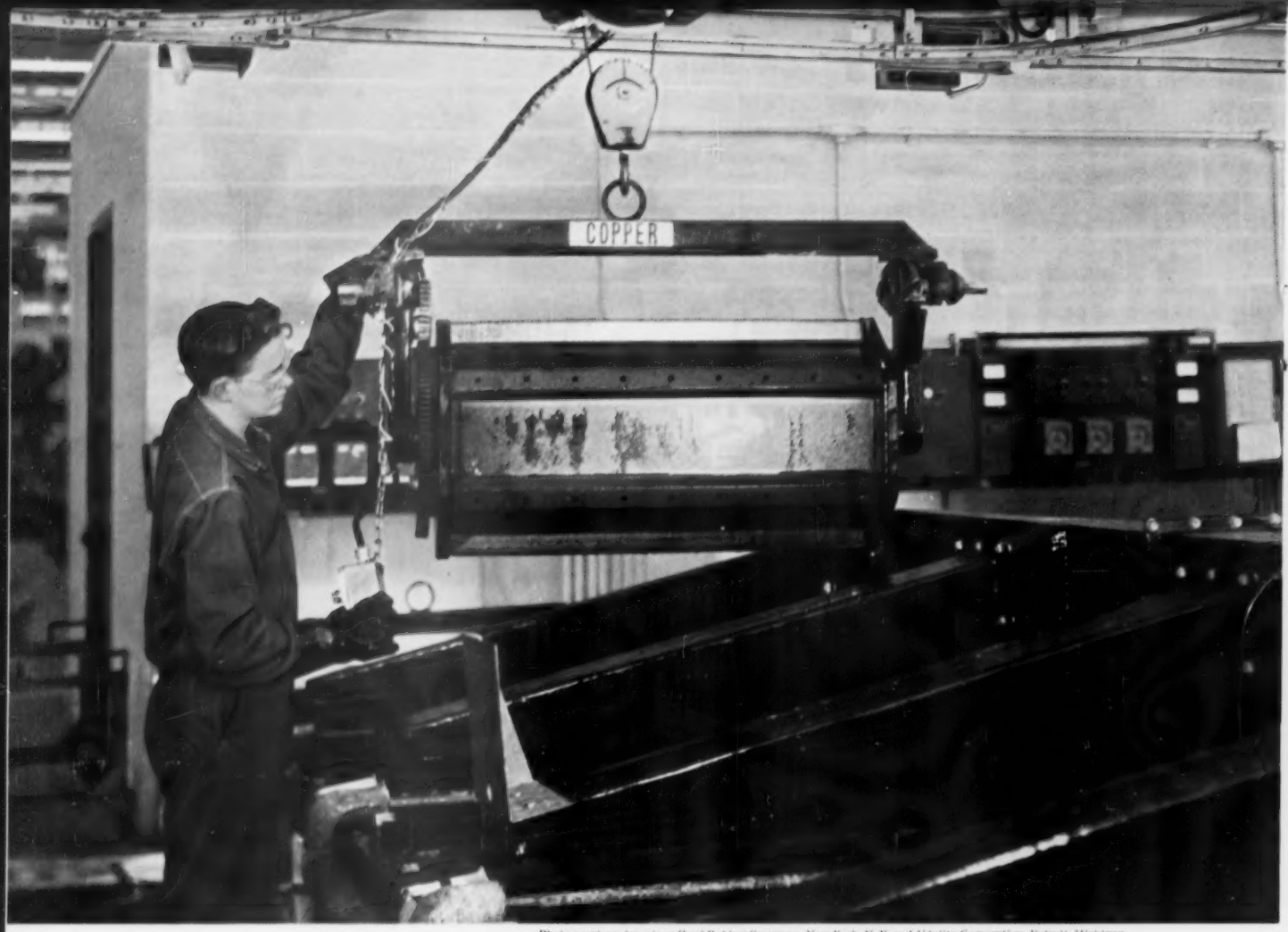

Photo courtesy American Hard Rubber Company, New York, N. Y. and Udylite Corporation, Detroit, Michigan

New Answer to a Barrel of Hot Problems

Hot problem for a leading supplier of electroplating barrels was finding the right material for the cylinders. In the face of repeated exposure to heat, hard wear and corrosive plating solutions, these cylinders had to keep rolling without contaminating the baths. After many tries, they found the answer—a new, clean-running hard rubber with three times longer life.

The major advance of this new material over its predecessors springs from the fact that it's made with CHEMIGUM nitrile rubber. Its manufacturer uses CHEMIGUM for a combination of strength plus resistance to high temperatures, chemicals and solvents never before achieved in hard rubber.

Besides better barrels for plating, CHEMIGUM as hard rubber has wide applications as pipe fittings and other equipment for handling chemicals at high temperatures. In other forms, CHEMIGUM finds use in many other products requiring unusual resistance to oils, solvents and chemicals over a wide range of temperatures.

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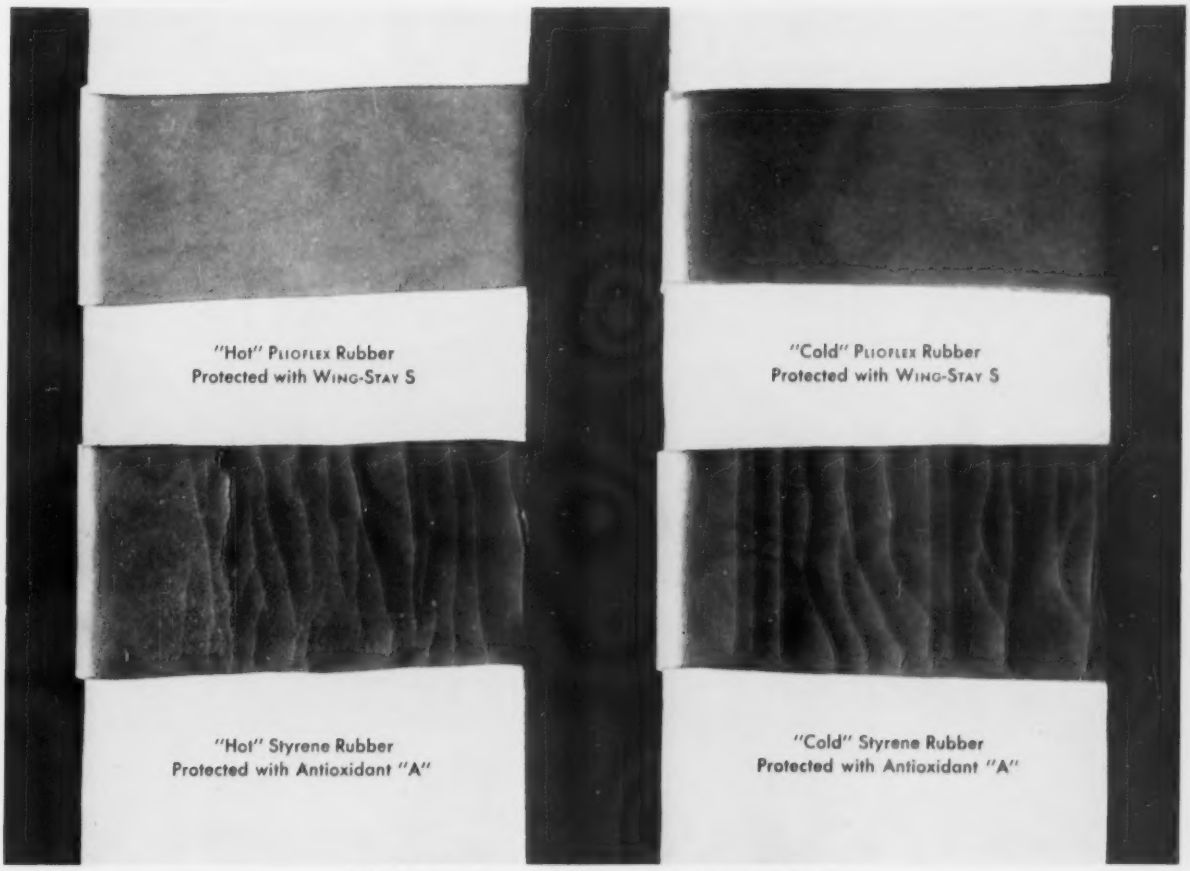
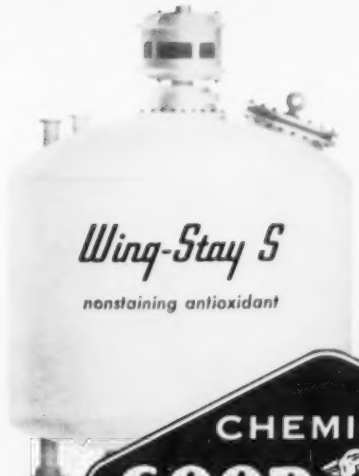


NOTE: All samples exposed to direct sunlight for three weeks

How to stop the sun in its attack on rubber



Exposure to sunlight can result in premature surface hardening and cracking of both natural and synthetic rubber goods. But *not* if you use WING-STAY S—the outstanding, nonstaining, non-discoloring antioxidant on today's market.

WING-STAY S is a liquid styrenated phenol. Easily incorporated into dry rubber or latices, it is extremely resistant to heat, sunlight or extraction by water—provides economical protection against aging with a minimum of discoloration, odor or migration.

Compare the test pieces pictured above. They show how much more protection WING-STAY S gives styrene rubber against direct sunlight than does another well-known nonstaining antioxidant. Your own tests will give you further proof of its superiority. So write, today, for samples and the latest *Tech Book Bulletins*. The address:

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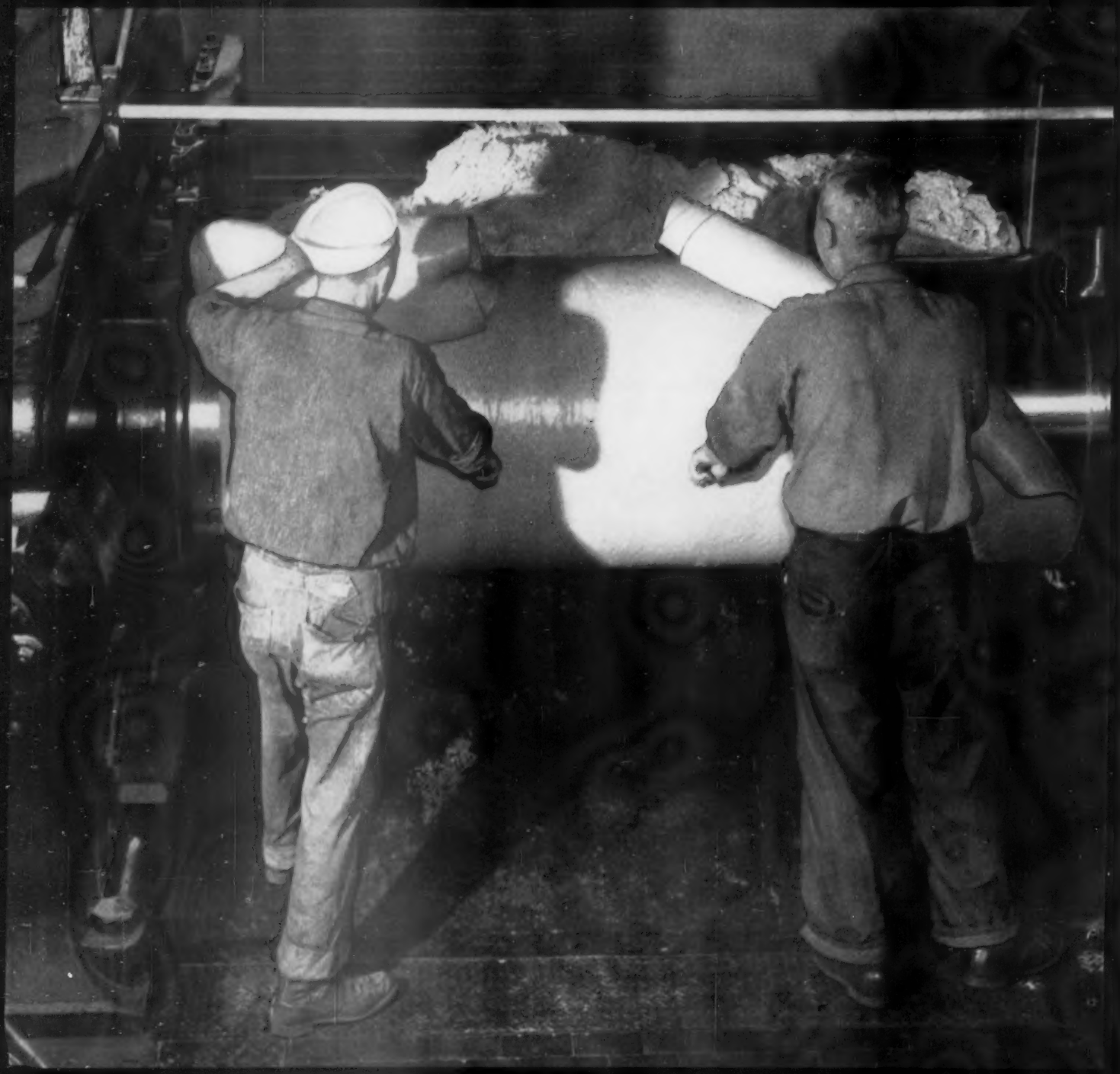

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AT LOW COST

SPECIFY New Improved SYNPOL 1708

Many properties formerly found only in premium priced rubbers, are now available to you in economical SYNPOL 1708.

Because TEXUS SYNPOL 1708 offers low moisture absorption and low ash content, stable light color, excellent flex life and fast cures, it is rapidly replacing many of the standard-priced hot *and* cold non oil-extended rubbers.

New Improved SYNPOL 1708 has been developed by the use of a new non-staining anti-oxidant, new plant facilities and a new non-volatile pale naphthenic oil used exclusively by TEXUS.

SYNPOL 1708 is particularly economical for such products as wringer rolls, toys, colored specialties, shoe soles, wire insulation and other products formerly requiring a higher priced rubber.

SYNPOL 1708 technical data will be supplied promptly upon request to the TEXUS representative in your area or Naugatuck Chemical, Naugatuck, Connecticut, Sales Agent for TEXUS SYNPOLS.

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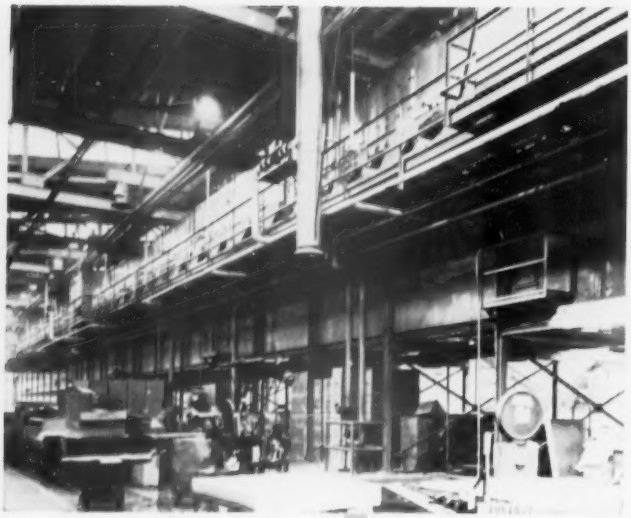

Foam Rubber is tricky material to process. It requires not only long exposure to proper heat and other carefully controlled atmospheric conditions but precisely zoned conditions. The AIRFOAM RUBBER installation at The Goodyear Tire & Rubber plant in Akron (illustrated) is an excellent example of the care with which the engineering details have to be worked out. First, the Latex Foam is cured in an 800' double pass enclosure with 10 controlled zones. The cured foam rubber then passes through a 400' drying unit with 16 controlled zones. The entire 1200' of travel involves carefully controlled 'engineered atmospheres'.

Conditioning of the molds also takes place in a carefully 'engineered atmosphere'. But that's another Ross story.

Ross Engineers are specialists in the field of "Engineered Atmospheres", serving not only the rubber industry in all its phases but other industries where baking, curing, drying or other treatment in a carefully prepared 'atmosphere' is required. We'll be glad to discuss your problem in a preliminary way. Perhaps we can be of help.

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Where mechanical steps, such as the laminating, coating, impregnating, saturating or embossing of webs is also involved, Ross Engineers work closely with the experienced engineers of an affiliated company, John Waldron Corporation, widely known as "Web Processing Engineers"

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It is so easy to produce rubber articles
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USE ULTRASIL VN3
There is no better Silica Filler for this purpose.
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a department

an operation

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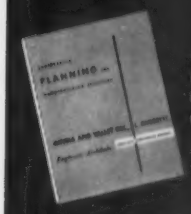

Giffels & Vallet services are discussed in a special Planning Brochure. A copy will be mailed on request.

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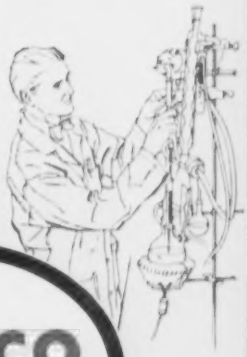

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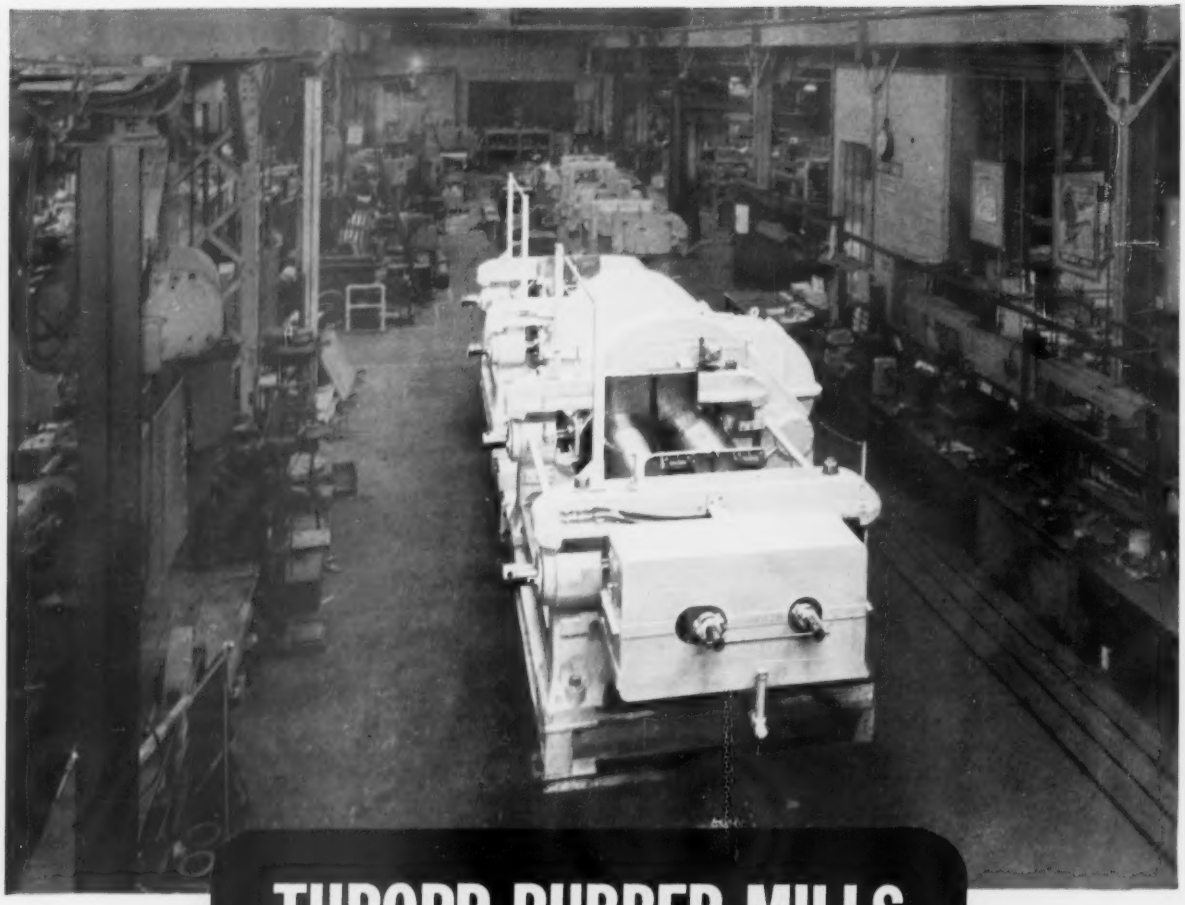

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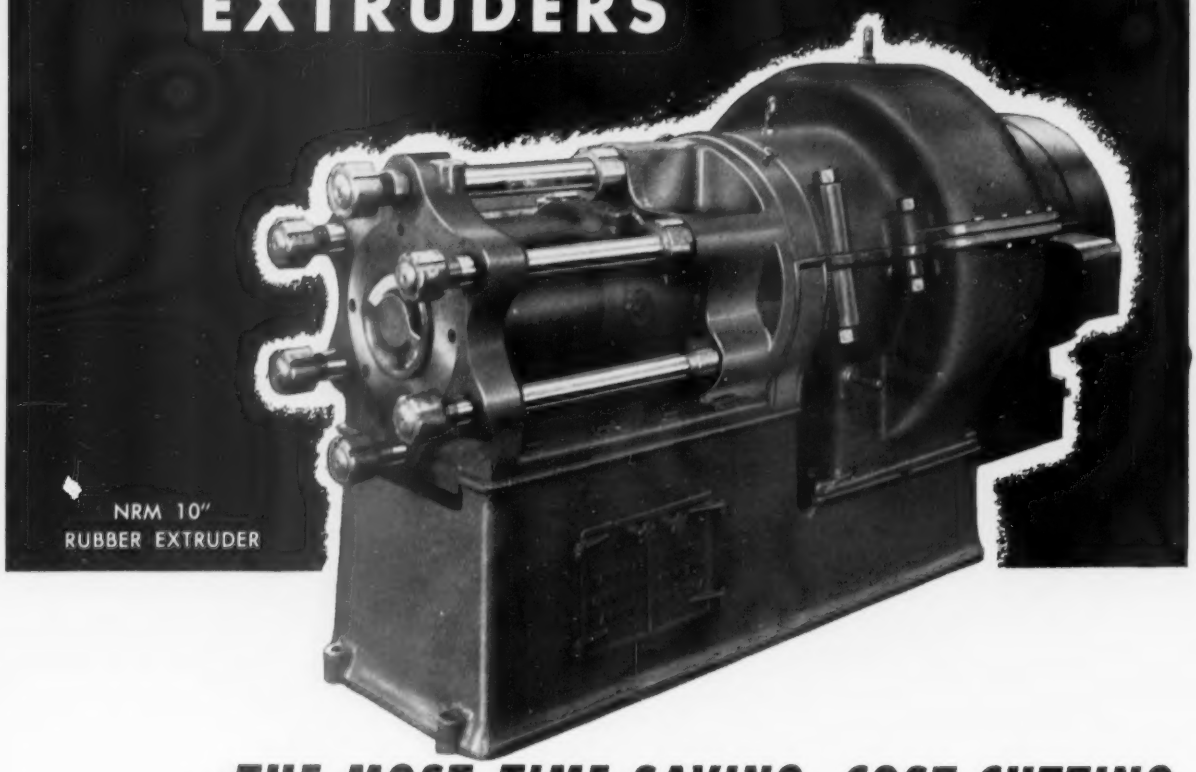
4 big advantages make NRM Rubber EXTRUDERS



NRM 10"
RUBBER EXTRUDER

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- LOW INITIAL COST
- LOW MAINTENANCE
- HIGH PRODUCTION
- L-O-N-G LIFE

2691

THE NRM RUBBER EXTRUDERS shown here are representative of the **full line** available to the industry in sizes from 1½" to 12". Larger Extruders to meet special requirements are produced on order. While many advanced design and construction features contribute to the four **big** advantages of NRM Rubber Extruders, the following are of special importance:

SIMPLICITY — Practical, uncomplicated design makes NRM Extruders extremely dependable and easy to operate. Compact construction makes them space-saving.

VERSATILITY — A variety of die heads make possible tube, tread, slab and other types of extrusions with a single machine, further increasing the production range of NRM Extruders.

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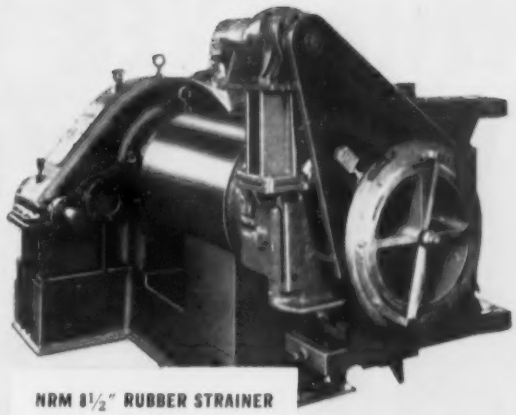
It's easy to spend more for a rubber extruder than the low first cost of an NRM, but difficult to equal the NRM quality features that help manufacturers increase profit on rubber goods production. If you are planning to purchase rubber extruders, contact us. We'll be happy to assist you in your planning, and recommend the type and size NRM Extruders to meet your requirements most efficiently and economically.



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Quick-opening air-operated die heads, hinged strainer plates, undercut feed boxes . . . save time, cut costs in stock preparation.

NRM 4½" MIL-X-TRUDER®

Turns warm-up time to production time by eliminating the need of a warm-up mill. Uses either extended smooth-bore, or fluted cylinder liners. Ideal for extruding Silicone compounds.

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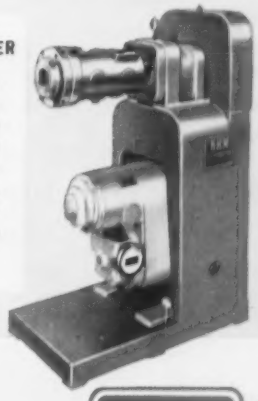
Never an idle moment for this machine . . . when not in laboratory work, it pays its way in actual production of small cross-sections. Materials, design and construction are the quality equal of any big NRM Extruder.



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- MIL-X-TRUDERS
- RUBBER STRAINERS
- MIL-STRAINERS
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timed program controller

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Settings can be quickly changed to accommodate different types of goods or for variations in compounding. It will actuate switches, turn valves and perform many other operations involving temperature, pressure, mechanical motion, electrical energy or any combinations of these . . . and perform each function in exactly the same way time after time. It will handle automatically from one to eight electric or pneumatic operations.

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SUNDEX 1585. A predominantly aromatic product compatible with natural rubber and butadiene-styrene polymers.	NEW	Particularly useful in the manufacture of oil-extended polymers where easy processing and optimum aromaticity are required.
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SUNDEX 41. A complex, dark colored blend of high molecular weight petroleum fractions and a specially prepared asphaltum.		Processing natural rubber and butadiene-styrene polymers.
SUN PROCESS AID 515. A nonstaining, highly paraffinic type petroleum derivative with a low viscosity and fair processing ability.		Manufacture of butyl inner tubes. Processing natural rubber and butadiene-styrene polymers where color stability in the finished vulcanizate is important.
SUN PROCESS AID 551. A nonstaining, highly paraffinic type product with a low volatility, medium viscosity, and fair processing ability.	NEW	Manufacture of oil-extended polymers where nonstaining of the finished commercial article is important.
SUN PROCESS AID 594. A medium viscosity, naphthenic type petroleum derivative with a low volatility and good processing ability.	NEW	Manufacture of oil-extended polymers. Dry mixing process for natural rubber and butadiene-styrene polymers. Economical where some discoloration in the finished rubber can be tolerated.

For full information on these process aids and on Sun lubricants for rubber-process machinery, call your Sun representative or write to Dept. RA-8.

Circosol, Circo, Sun, and Sundex are Registered Trademarks

INDUSTRIAL PRODUCTS DEPARTMENT

SUN OIL COMPANY Philadelphia 3, Pa.

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FEMCO SPLITTERS from laboratory

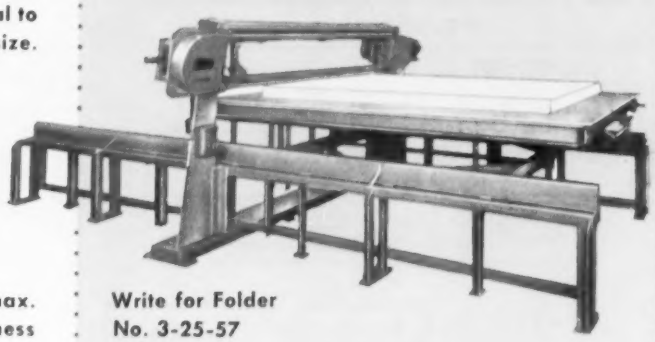
1 LABORATORY SPLITTER

Identical (except in size) to Model 4410-430B (shown second right) but scaled down to table size 18" x 24" for laboratory splitting. Splits polyurethane, polyvinyl foam, polystyrene, foam rubber from stock equal to table size.

Cuts stock to max. 12" thickness

2 LEVELER and SPLITTER

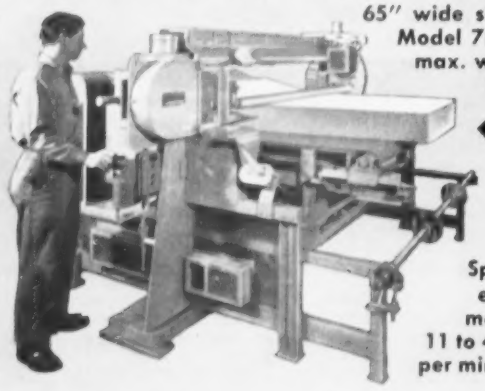
Model 4410-430A. Splits Foam Rubber to ⅛" and handles stock to 84" x 110". Levels slabs to 12" high, reduces to sheets of required thickness. Has interchangeable ribbon guide assembly for splitting cord foam rubber and for cutting angles and contoured shapes.



Write for Folder No. 3-25-57

5 Models 65 & 78 SPLITTERS

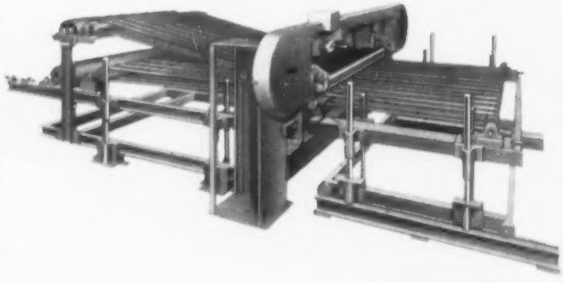
Splits all newest synthetic foams, foam rubber, rubberized hair, bonded foam, etc. Both models split leveled blocks of stock from rolls, sheets and slabs to sheets as thin as ⅛" Both handle rolls to 40" diameter. Model 65 handles max. 65" wide stock; Model 78, to max. width 78".

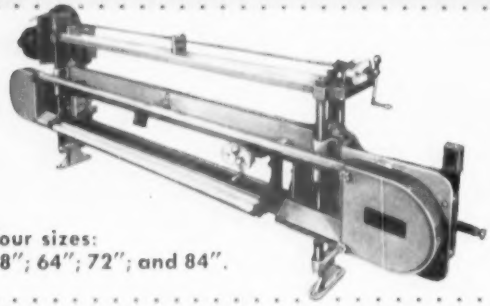


Speed, either model: 11 to 44 ft. per minute.

6 CONVOLUTION MACHINE

Levels like cushion cutter, splits like Models 65-78 Splitter, takes 9' or longer slabs or rolls; has Convolution features which produce irregular or corrugated cuts on polyurethane and polyvinyl stock. Splits stock into sheets to ⅛" with max. thickness of 15".





Four sizes: 48"; 64"; 72"; and 84".

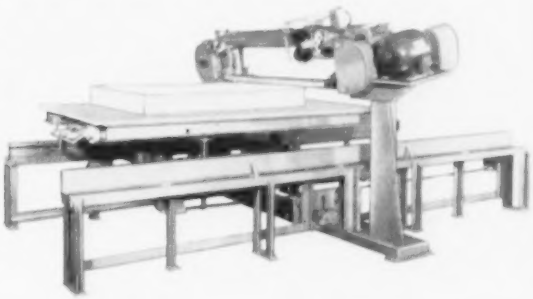
9 Adjustable SPLITTING HEAD

Installed on existing conveyor systems. Located across conveyor — vertically adjustable to stock moving along conveyor. Use it as single unit or install in a series along conveyor line. Splits polyurethane, polyvinyl, foam rubber, bonded foam, rubberized hair, cellulose sponge, resin bonded fiber, polystyrene and Fibreglas.

models to High Production Units . . . .

3 LEVELER and SPLITTER

Model 4410-430B, similar in most ways to Model 4410-430A (at left). Splits polyurethane, polyvinyl, polystyrene, styrofoam, and other rigid urethanes, to sheets ⅛". Handles stock to 84" x 110".



Write for Folder No. 3-25-57

4 Single Head Automatic Table Type LEVELER and SPLITTER

Automatic, requires only one (man OR woman) operator. Levels slabs of polyurethane, polyvinyl, other materials to 24" high and reduces to sheets ⅛" to 6" thick. Cuts some stocks to 1/16". Self-indexing, lowers head to cut stock, raises to clear material as table returns.

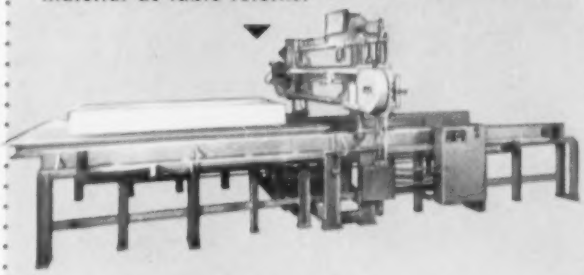
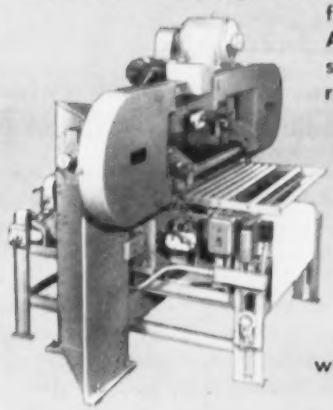


Table sizes: 45 x 64; 45 x 84; 64 x 84; 64 x 96; 64 x 110; 84 x 110; 84 x 162.

7 65" Heavy Duty SPLITTING MACHINE

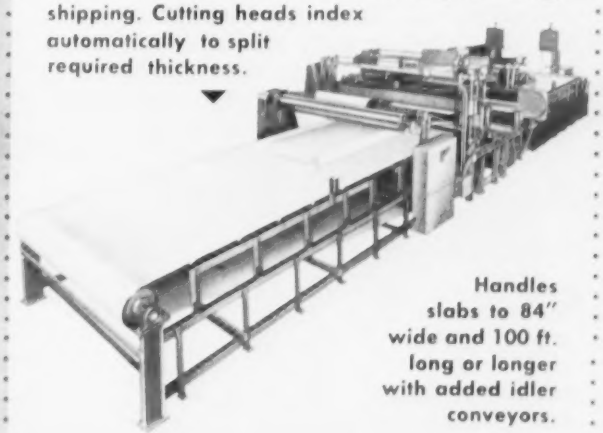
For heavy factory use. Available with or without leveling device. Splits materials such as open and closed cell sponge rubber, closed cell vinyl foam to 65" wide. Available with roll stock windup or return conveyor belt for sheet stock. Cuts to 2" maximum thickness.



Equipped with 2" wide blade—driven by 15 hp motor.

8 Double Head Conveyorized SPLITTING MACHINE

Levels polyurethane slabs; splits into ⅛" sheets, then winds stock on two rolls for easy handling, shipping. Cutting heads index automatically to split required thickness.



Handles slabs to 84" wide and 100 ft. long or longer with added idler conveyors.

The FALLS ENGINEERING AND MACHINE CO.

1917 40th ANNIVERSARY 1957

Established 1917

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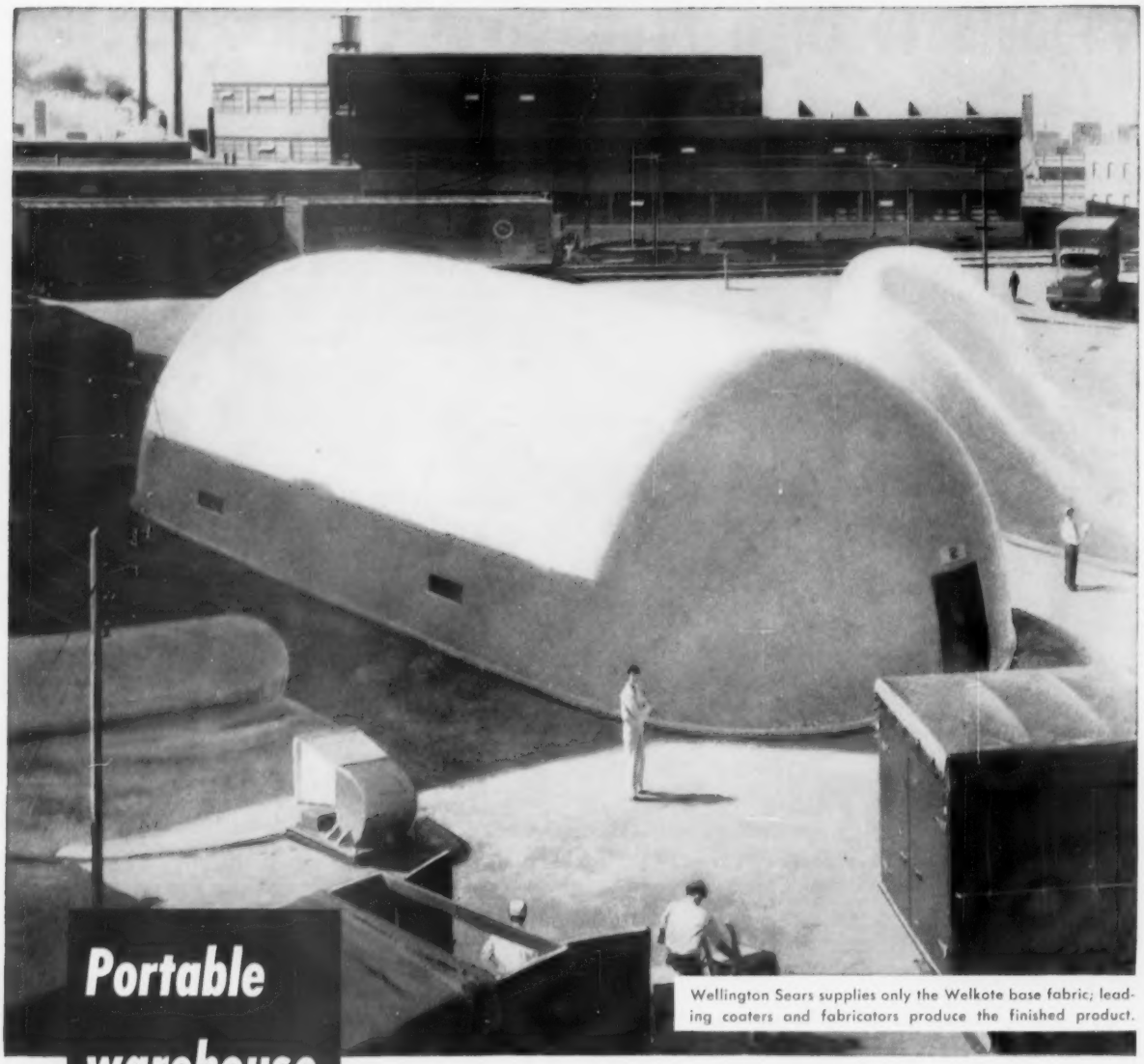
Service to our CUSTOMERS

Our service on the machinery we make is a big reason folks think first of FEMCO for Special Machinery for the rubber, plastic and allied industries. We also invite you to use the facilities of our Customer Service Center where your stock may be test cut on our machines and a full report given to you without obligation.



Wellington Sears supplies only the Welkote base fabric; leading coaters and fabricators produce the finished product.

Portable warehouse made of fabric "lives" on air!

No visible means of support: *air* does it! Now huge vinyl-coated nylon buildings can be easily packed, transported swiftly to a site, inflated on the spot, and start receiving goods for storage in a matter of hours. And constant, regulated air pressure keeps walls and roofs taut even when doors are open!

As in so many new industrial uses of textiles, the rugged nylon base fabric, *Welkote*, is produced by the mills of West Point Manufacturing Company and supplied by Wellington Sears. Welkote is engineered specifically as a base for vinyl and neoprene coating, and is just one aspect of our textile service to all kinds of industries, for all kinds of uses. We've been doing this for more than a century. Surely you can use this experience to help in solving *your* fabric problems!

For informative booklet, "Fabrics Plus," write Dept. G-8.

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Color stability of TiO_2-loaded, Dutrex 33-extended SBR stocks after severe exposure to artificial sunlight.

Sample designation—reading clockwise

1707—GRS-1707

Dutrex 33—SBR-37.5 phr Dutrex 33-extended iron pyrophosphate polymer

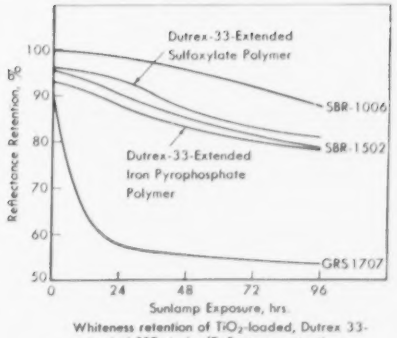
1502—SBR-1502

Dutrex 33—SBR-37.5 phr Dutrex 33-extended sulfoxylate polymer

1006—SBR-1006

Non-staining extending oil

for light-colored rubber stocks



Whiteness retention of TiO_2-loaded, Dutrex 33-extended SBR stocks. (Reflectance retention compared to unexposed S-1006 control.)

Shell Dutrex® 33 is a superior naphthenic extender for SBR combining extremely light color and outstanding color stability with good compatibility and low volatility. This attractive balance of properties now provides practical oil-extended SBR stocks with staining and discoloration resistance approaching the best oil-free SBR types.

The outstanding resistance of Dutrex 33-extended SBR stocks to discoloration by severe sun lamp exposure is shown in the accompanying illustrations. Results indicate that Dutrex 33-extended SBR may serve in some applications where critical discoloration and contact or migration staining resistance have previously demanded use of oil-free types.

For additional information, write or call Shell Oil Company, 50 West 50th Street, New York 20, N. Y., or 100 Bush Street, San Francisco 6, California.

SHELL DUTREX 33

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For top quality and sparkling color, too
...*make it from*
SHELL SYNTHETIC RUBBER

IF YOU WANT the tile you make to be the *best* . . . if you're looking for brighter colors and better color stability . . . use improved Shell S-1006 hot or S-1502 cold rubber.

Both are excellent for other products, too—light-colored mechanicals, sporting goods, shoe soles and heels.

The Shell Chemical plant at Torrance, California produces a full line of butadiene-styrene-type synthetic rubber to fill the needs of large and small Western manufacturers. Available types include hot, cold, oil-extended and black masterbatch rubber as well as hot and cold latices.

Whatever you manufacture from rubber, convenient location and diversity of product make Shell Chemical your logical rubber source in the West. Remember too—Shell's Technical Service Laboratory is ready to help you find practical solutions for troublesome technical problems.

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SHELL CHEMICAL CORPORATION
Synthetic Rubber Sales Division
P. O. Box 216, Torrance, California

SHELL

Capitol Cues

BUSINESS IN THE SECOND HALF OF 1957 will post some real gains over the first six months. That seems to be the consensus of most economists in industry and government—including those officials who advise the President. The plateau of recent months will turn into a modest uptrend. This doesn't mean a resumption of the recent boom. But the increases will certainly be enough to establish 1957 as the biggest year in all the country's history.

The pattern foreseen is very much like last year's when things also started slow, then finished in a rush. In '56, the third quarter dragged, partly because of the big steel strike; this Summer will be slow, too, with things moving along side-wise. The last quarter will see quite a bit of rise, as was the case in '56: Total output will climb at a $10 billion a year rate.

The upward push will come from several sources:

- Government spending...state and local, as well as federal... is rising steadily—for defense and long overdue public works.
- Inventory-buying by business will mean a lift, too. Industry held its purchasing down in the first half, though there was no drop in goods consumption. So stocks fell in many lines. Now, stocks must be rebuilt for Fall and Christmas business.
- Factory building by industry will set new records. Gains may not be as large as in recent periods, but will still add lift.

ADDITIONAL REASONS FOR OPTIMISM lie in the fact that the soft spots that slowed business during the first half are now showing signs of firming. The signs are still faint, but they are definitely considered encouraging. Take housing, for example—a big stimulator for many supplying industries. The recent hike in FHA interest rates allowed has already lured more money into housing and spurred building. And Congress has voted still more funds.

New car sales—another soft spot—are slated to perk up, too, as a result of big Summer sales pushes and the snappy new GM models due out in the Fall. House-furnishings will do better on good air conditioner sales this Summer, good TV business in the Fall. Many families will have cleared up instalment debt.

MONEY WILL GET TIGHTER DURING THE SECOND HALF. Demand for credit will go up faster than supply. Industry must finance Fall inventory; the Treasury must raise $3 billion more than in July-December of 1956; and the state and local governments must borrow a lot to pay for the public works.

If all demands are met...and officials could meet them just by creating the credit...there'd be a big new surge of inflation. To prevent this, they'll hold the extra credit made available to what experts consider "normal or legitimate" rises in demand. This means that getting greater-than-usual credit may be tough. Even so, it looks as if interest rates may be forced up a notch.

NO SOLUTION TO THE TIGHT-MONEY PROBLEM seems likely to emerge from the hearings held by the Senate Finance Committee. The tone of questions and answers during the quizzing of key government officials shows that the main result may be political ammunition for the Democrats for the campaign in '58. No one present seemed ready for a serious approach to the matter.

Continued on Next Page

THE EXPLANATION OF TODAY'S PUZZLING INFLATION, as economists see it, is this: Normally, prices rise when goods are short or when government lives beyond its income and prints the money to pay for what it buys; but this is not the case today. Instead, labor is strong enough to force wage hikes, regardless of productivity or living costs. And business passes them along in higher prices rather than force labor strife. Government price supports aggravate the situation. And, finally, there's not enough savings coming along to meet all the government and business demand for long-term money.

It's hard to say just when the inflation may end. Most experts think only a severe cut in available credit will stop the rise. That could start a recession, which the government won't risk.

A NEW SOURCE OF LONG-TERM CAPITAL for small business is under study these days by influential Senators. It's a proposal for establishing capital banks under federal charter. The lawmakers realize that small concerns can not raise money by floating securities as readily as big outfits do and that undercapitalization is often the main reason that small businesses go broke.

The banks would lend large sums for long periods at favorable rates of interest. These banks could also buy common stocks. There will be difficulties in putting the scheme over—getting investors to put up the starting capital. But sponsors think they have that licked and hope to vote a law at next session.

The idea isn't new, but the current proposal—introduced by Senator Sparkman—would have plenty of federal help. First, there'd be a tax advantage to investors, some of the initial profits being tax-free. Equally important, a government agency would start the banks but sell out to investors once launched.

WHAT IMPACT WILL DISARMAMENT HAVE on business in this country, if an understanding is reached with Russia? Not very much, say officials who are following the negotiations at this end. No big cuts in government arms orders seem likely. Therefore, the indirect effect on non-defense business will be slight, too. The nervousness some businessmen felt—as shown by the stock market—stemmed largely from lack of understanding of what's involved.

The main U.S. goal is NOT a quick, sharp cut in arms, though that would be desirable. Both sides are groping for a more limited objective—some way of halting the arms race. A first step would have to be development of mutual confidence as to each side's sincerity. Then, both camps might feel free to disarm.

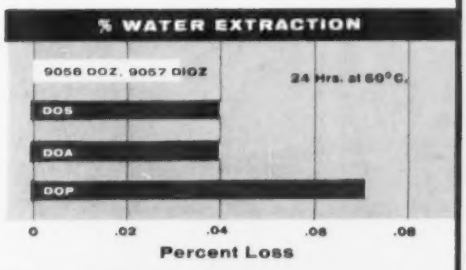
The key proposals under discussion involve few dollar cuts:

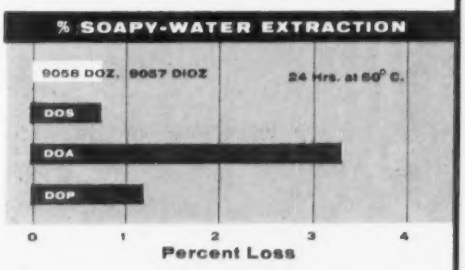
- Suspension of bomb tests would involve only a little manpower and materials. Production of today's bombs would continue.
- Halting bomb output would cut the Atomic Energy Commission's operations by less than $1 billion—mostly at the AEC plants.
- Cutting troop numbers to 2½ million men might save $1 billion a year in pay, allowances, and upkeep, plus another $1 billion in post maintenance. Cuts to 1.7 million men are years away.

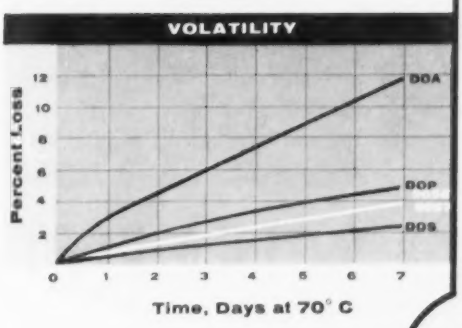
The biggest foreseeable cut would be less than what followed truce in Korea, which business absorbed with little trouble.

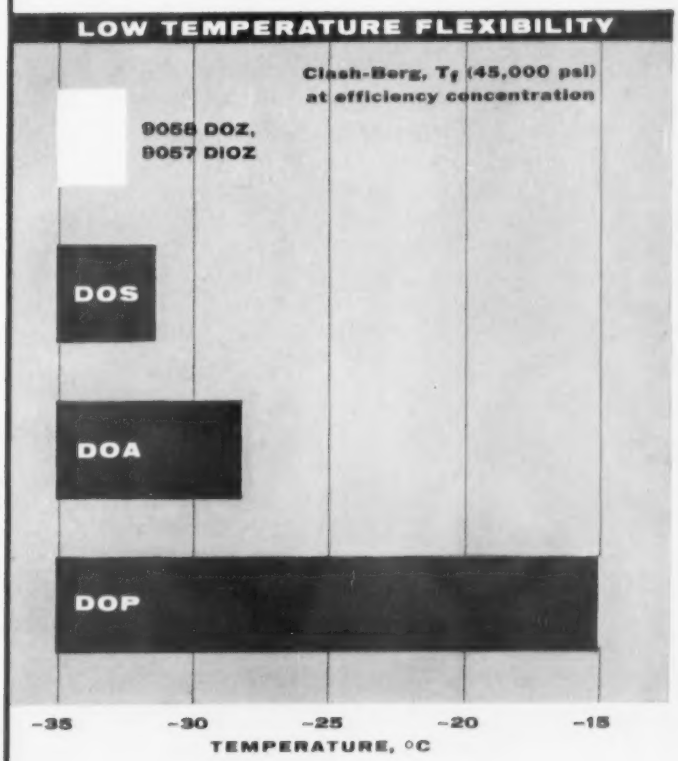
DOZ gives you low-temperature flex—PLUS!

Here's proof that Plastolein® 9058 DOZ is the best all-around low-temperature plasticizer available!









When a plasticizer does *many* things well, it is reasonable to expect product improvement, lower costs and increased profits. That's exactly what happens when you use Plastolein 9058 DOZ or its companion product, Plastolein 9057 DIOZ. As the charts illustrate, both impart unexcelled low-temperature flexibility, *and at the same time* provide low volatility, low water extraction, and low soapy-water extraction. In addition, they possess excellent resistance to heat and light, provide low-viscosity dispersions, and impart excellent drape to film and sheeting.

When you put all of these features into your calendered and cast films, calendered sheeting, calendered and dispersion coated fabrics, fabricators of finished goods will be more receptive to your products, will reorder time after time. That's why you should use Plastoleins 9058 DOZ or 9057 DIOZ. Write Dept. U-8 for descriptive literature or evaluation samples, today.

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This finely divided wood cellulose reduces blistering and nerve, controls shrinkage, improves dimensional stability. It permits sharper designs and harder, smoother surfaces. It solves your dispersion problems.

Let us show you how it adds sales appeal to your products, scores with the customer, increases your profits. Write to us outlining your specific process problems. Address Dept. FG-8, our Boston office. (Sold in Canada as Alpha-Floc by Brown Forest Products, Ltd., Montreal, Quebec.)

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Berlin, New Hampshire

General Sales Office:

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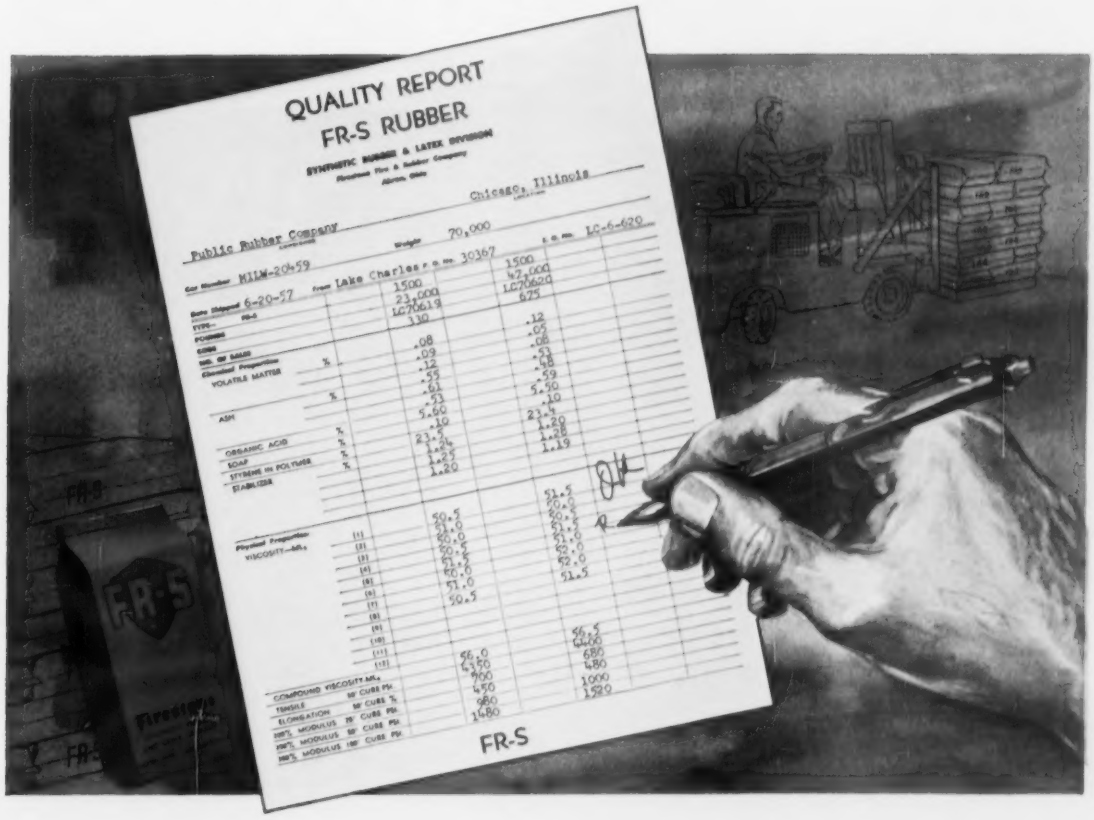

This Quality Report is the FR-S Pedigree . . . Your Assurance of Rubber that Meets Highest Specifications

This Quality Report gives you a complete picture of every pound of FR-S rubber you buy. It accompanies *every* shipment, and summarizes the results of more than 50 different tests that control the uniform quality of FR-S—from the purity of the water that flows into the giant reactors, to the physical and chemical properties of your finished product. It's your assurance that you're getting the finest rubber man can make . . . modern rubber that meets your most exacting specifications in every respect. Why not learn how FR-S can improve your product — just mail the coupon below:

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BEST IN RUBBER

Goodrich-Gulf Chemicals, Inc.

Ameripol...

OIL-EXTENDED POLYMERS

Types	Physical Properties*		Selection Guide
1703	Tensile	3240 psi.	An improved, lighter colored rubber, relatively non-discoloring and non-staining. Used for white and pastel colored mechanical goods, floor tile, toys, sheeting, etc.
	Elongation	650 %	
	Modulus @ 300% Elongation	990 psi.	
	Mooney Viscosity—		
	ML212°F. @ 4 minutes		
	Raw Polymer	59	
	Compounded Stock	56	
1705	Tensile	3800 psi.	General purpose pastel rubber used where color is not important . . . in tires, molded and extruded products.
	Elongation	690 %	
	Modulus @ 300% Elongation	860 psi.	
	Mooney Viscosity—		
	ML212°F. @ 4 minutes		
	Raw Polymer	60	
	Compounded Stock	57	
1707	Tensile	3170 psi.	A non-staining polymer. Used for extrusions, molded products, shoe soles and heels, etc.
	Elongation	760 %	
	Modulus @ 300% Elongation	630 psi.	
	Mooney Viscosity—		
	ML212°F. @ 4 minutes		
	Raw Polymer	55	
	Compounded Stock	48	
1708	Tensile	3280 psi.	Non-staining polymer with relatively low water absorption, improved electrical properties. Used for electrical insulation, athletic goods, coated fabrics, moldings and extrusions.
	Elongation	610 %	
	Modulus @ 300% Elongation	950 psi.	
	Mooney Viscosity—		
	ML212°F. @ 4 minutes		
	Raw Polymer	61	
	Compounded Stock	55	
1710	Tensile	3310 psi.	Similar to 1705, with higher oil content. Used for tires, molded and extruded products.
	Elongation	720 %	
	Modulus @ 300% Elongation	670 psi.	
	Mooney Viscosity—		
	ML212°F. @ 4 minutes		
	Raw Polymer	55	
	Compounded Stock	51	
1712	Tensile	3180 psi.	Used for insulation, tires, molded and extruded goods.
	Elongation	730 %	
	Modulus @ 300% Elongation	690 psi.	
	Mooney Viscosity—		
	ML212°F. @ 4 minutes		
	Raw Polymer	55	
	Compounded Stock	51	

***Typical average production values. Cure 50′ @ 292°F.**

Oil-extended man-made rubber provides balance of properties and economy

Ameripol is the preferred butadiene-styrene rubber—superior or equal to natural rubber in aging, resistance to wear, weathering, water, oil, permeability to gases.

The cold oil-extended Ameripol grades cost about 20 to 25% less than other grades, yet offer many of the same desirable physical properties. The addition of oil to latex of this type results in an easier processing polymer at lower cost.

Write for free copy of 24-page booklet "Ameripol —the preferred rubber". Complete technical data helps you select and specify.

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Cold Oil-Extended Polymers
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TITANIUM DIOXIDE

A popular choice of compounders for high-grade whites that stay white is UNITANE O-220. This readily dispersible anatase pigment is characterized by high brightness and whitening strength, and a neutral color tone that makes it ideal for pastels.

Careful in-process control of chemical purity guards the color stability and aging properties of UNITANE O-220 and other members of the extensive UNITANE pigment line. Your Cyanamid Pigments representative can provide full information.

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Improved-quality extrusions at faster rates with

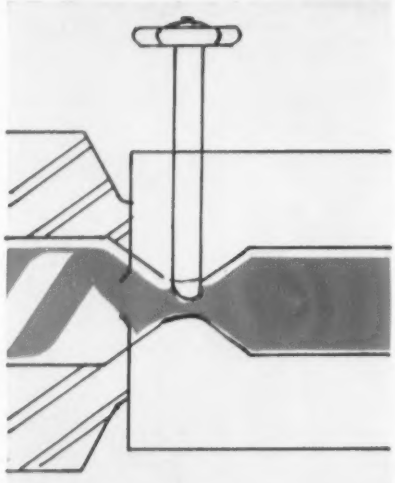
new "controlled pressure" extrusion technique

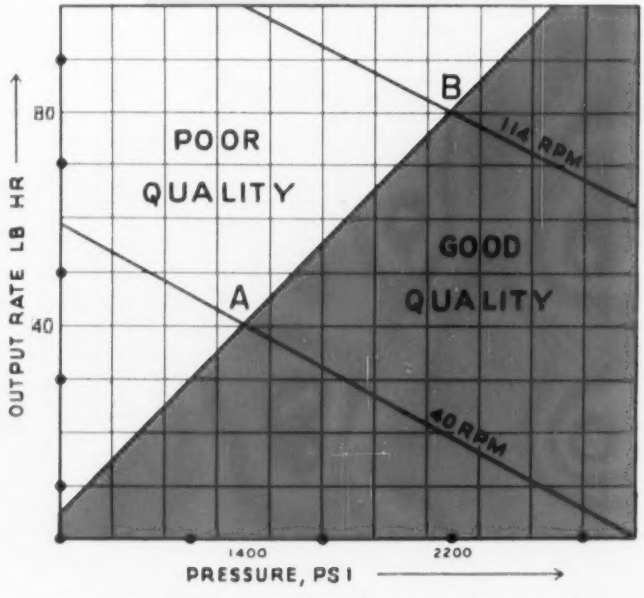
Experiments have shown that extrusion quality is related to three primary factors—pressure, resin temperature, and extrusion rate. A change in any one of these factors affects one or both of the others.

Now, Bakelite Company Laboratories have developed an efficient, accurate method of controlling pressure during the extrusion operation. Essentially, it employs a valve between the extruder head and the die, together with a pressure gauge and an immersion thermocouple in the head, or between the head and the valve.

This process provides a continuous method of control. Proper manipulation of pressure and screw speed results in better temperature control and improved resin homogeneity, better mixing characteristics and an improved product at increased output.

The development of this controlled-pressure (valve) extrusion by Bakelite Company permits operation of all extruders at their maximum capacity while maintaining highest quality.





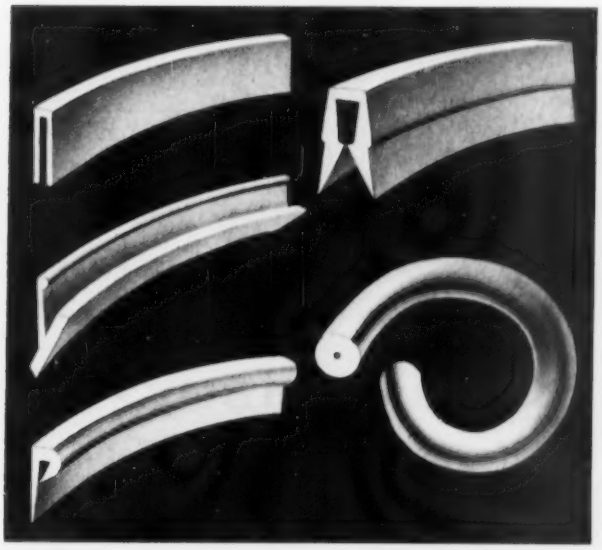
The above graph on a typical sample run gives dramatic evidence of the effect of the controlled pressure (valve) extrusion technique on output. Without the valve, the highest usable screw speed, giving commercially acceptable quality, was 40 rpm. This resulted in an output rate of 40 pounds per hour or 100 feet per minute (Point A). When the streamlined controlled pressure valve was used, the screw speed could be increased to 114 rpm, *DOUBLING* the acceptable-quality production rate (Point B).

The values used in the above figure are the result of one sample test run under a typical set of extrusion conditions and should not be applied empirically to other extrusion conditions. Conditions used in this test were as follows: two inch extruder using a dry blend electrical compound based on QYRS extruded on number 14 wire with a wall thickness of 1/32 inch. Improved extrusion results, similar to those shown for wire and cable, may be expected for other applications.

new BAKELITE dry-blend Vinyl Resin QYRS

BRAND

Controlled pressure (valve) extrusion permits the extrusion of dry-blend resin comparable in quality to the extrusion of hot-flux materials. When used with BAKELITE Brand Vinyl QYRS, it results in a superior product with improved finish, reduced roughness, and minimum "fisheyes".



QYRS is desirable for preblend formulations used in both electrical and non-electrical applications. It is particularly suitable for building wire, flexible cord, appliance wire, telephone wire, power cable, and such contour extruded items as garden hose, welting, and belting.

Advantages of QYRS include the following:

- **High bulk density** of 30-35 lbs./sq. ft., permitting larger tonnage output rates from a given size blender.
- **High specific viscosity** of 0.205 to 0.220, resulting in improved physical properties, such as strength.
- **More uniform particle size,** ensuring maximum extrusion rate, minimum dusting, and proper dispersion of plasticizer with resin.
- **Batch-to-batch uniformity,** assuring uniform extrusions.
- **Faster dry blending time,** based on tests that prove QYRS will dry blend 10-15% faster than conventional resins while still maintaining excellent dispersion of ingredients.
- **Utilization of present cycle,** so that fabricators can use the same blending cycle as presently employed with other dry-blending resins.
- **Adaptability to a shorter cycle** as a result of faster plasticizer absorption.

For further information on the controlled pressure (valve) extrusion method and the new BAKELITE Brand dry-blend vinyl resin QYRS, write Dept.YZ-167

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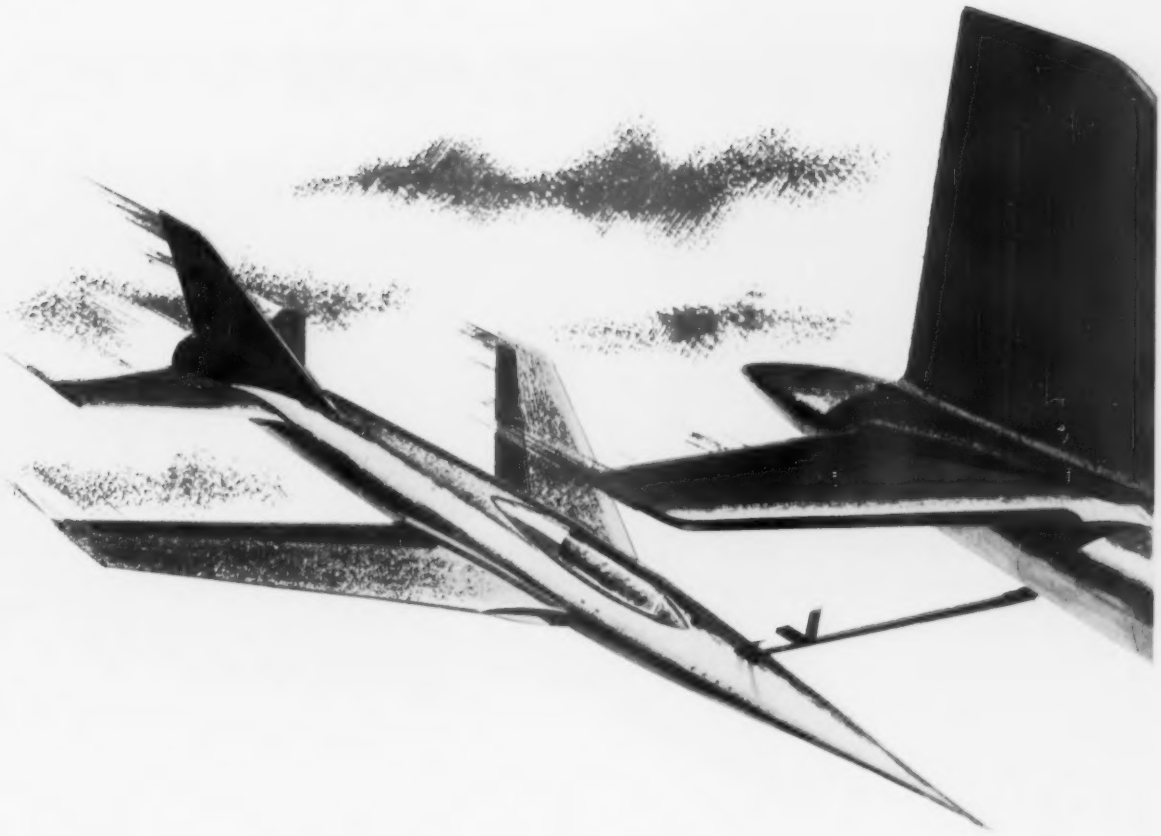

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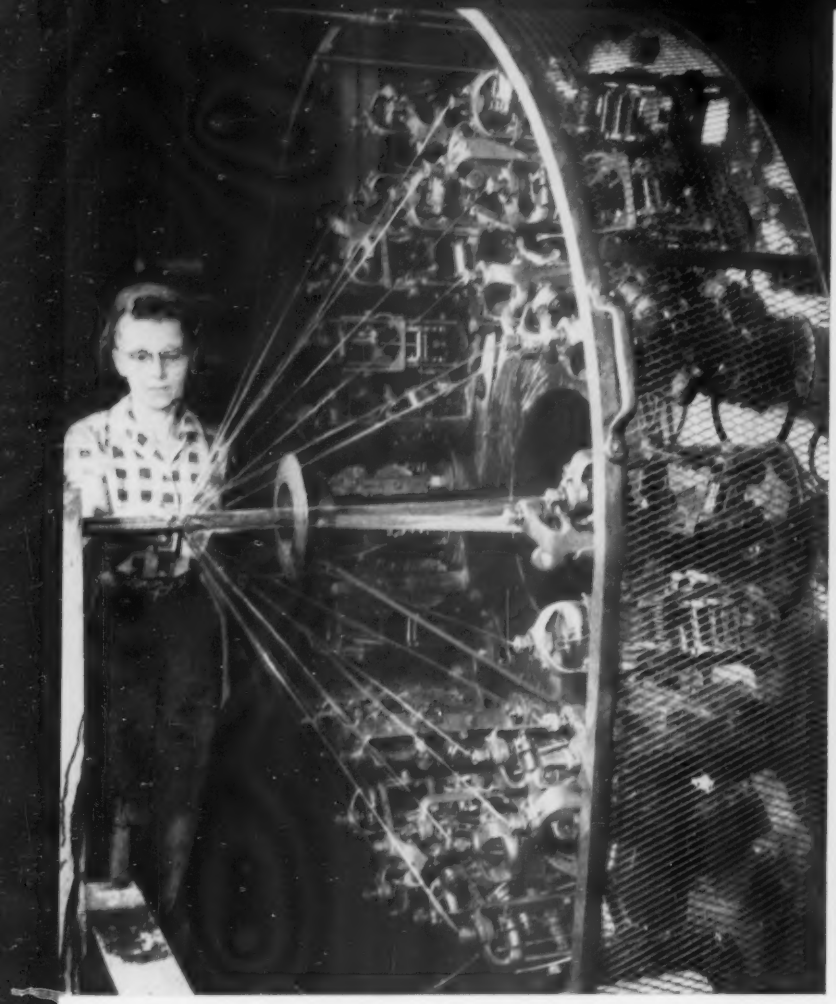
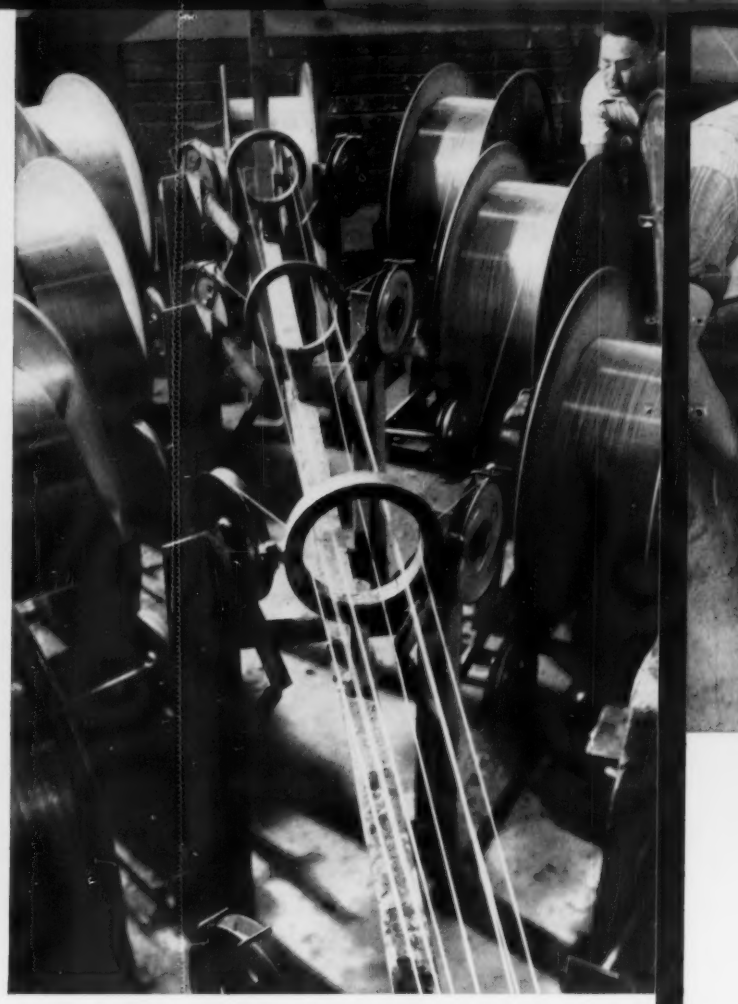


B. F. Goodrich Company braids multiple strands of steel wire into intricate sinews around rubber tube to help control and resist tremendous internal pressures required of flexible hydraulic hose. Wire such as supplied by Johnson has tensile strengths ranging from 240,000 to 400,000 psi.



Firestone Tire and Rubber Company uses only high tensile steel wire of exacting tolerances in building tire beads. Rapidly entering the bead machine in parallel —three to fifteen wires wide, depending on strength specified—the wires are coated with rubber. Clean bronze finish on Johnson wire assures proper rubber adhesion.

The best names in rubber use Johnson wire for strength and safety in tires and hose

The rubber industry has a sound reputation for producing quality products in advance of its needs by use of imaginative research—painstaking development of production methods—careful selection and testing of component materials.

Goodyear—Firestone—U.S. Rubber—B. F. Goodrich—Thermoid and others have established their names over the years by giving the general public and industry alike—strength, safety and durability in products such as long lasting pneumatic tires and tough pressure hose.

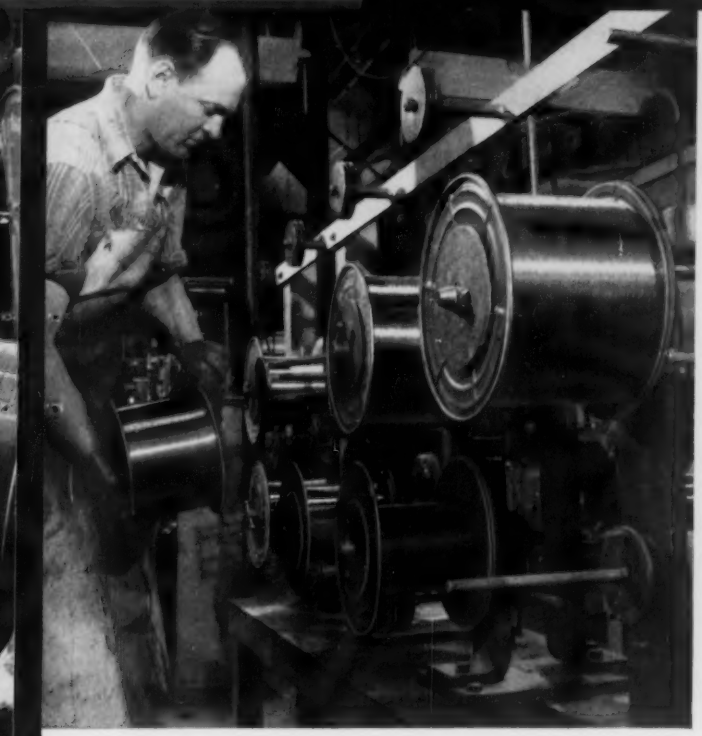
These two products owe their strength in part to the fine steel wires hidden inside them. For it is high-carbon steel bead wire which gives a pneumatic rubber tire—no matter what its size or job, the strength demanded by modern vehicles. Similar wire gives pressure hose its strong sinews which enable it to withstand working pressures as high as 10,000 psi—bursting strength may be three to four times as great.

Take the case of tire bead wire which Johnson supplies to every major tire manufacturer in the country. It is precision-drawn from special high-carbon rods to .037″ in diameter with a tolerance of only .002″—so fine that a 750-pound reel contains 39 miles of wire. Yet, a single strand exceeds 290 pounds of breaking strength equal to a tensile strength of 270,000 psi.

Also the wire must present a clean, unbroken surface and have a good and uniform bronze finish. This finish makes possible tight adhesion between the wire and the rubber surrounding it.

All these qualities contribute to the tire bead strength, help assure the safety of those who ride for work or pleasure on pneumatic tires.

Another special wire made by Johnson for the rubber industry helps rubber hose contain enormous pressures demanded by modern industrial applications. This reinforcing wire is drawn from selected high-



Thermoid Western Division of Thermoid Company has cut wire rewind loss to ¼ of 1% by use of Johnson Discard-a-Spool which eliminates overlaps and tangles, protects wire quality in shipment. The one-way disposable spool weighs only 28 ounces vs 200 ounces for standard spool—slashes tare weight 14 times.

United States Rubber Company wires tires for strength on this bead building machine. The strength comes from the steel wire bead in the edge of each tire. Johnson makes special high-carbon steel wire—.037″ in diameter with tolerance of only .002″ for U.S. and other major tire companies.

carbon steel in diameters ranging from .008″ to .020″ and has exceptional dimensional accuracy—tolerance is plus or minus .0005″.

Johnson hose reinforcement wire is supplied with a special liquor finish to provide maximum adhesion of steel to the rubber which fills the interstices between braids.

The wire is uniformly cast to make possible even spooling and has uniform tensile strength to prevent breaking under the working tension.

These excellent wire qualities, plus careful packaging and prompt delivery, have resulted in Johnson becoming a prime supplier to the rubber industry for hose reinforcement wire.

The outstanding performance of Johnson wire in the rubber industry is typical of the experience in other industries where Johnson supplies aircraft cord wire, armature binding wire, wire for brushes, metal stitching, preformed staple wire, bobby pin wire, rope wire, oil tempered and MB hard drawn spring wire, and music spring wire in a wide variety of sizes and finishes.

If you use specialty wires, call one of the offices listed to right and explore the advantages of Johnson quality which combines strength with economy.

The Goodyear Tire & Rubber Company finds that Johnson meets their exacting requirements for tire bead wire which has high tensile strength, twisting strength, elongation and special surface finish. Here parallel tire bead wires uncoil evenly into a bead building machine.

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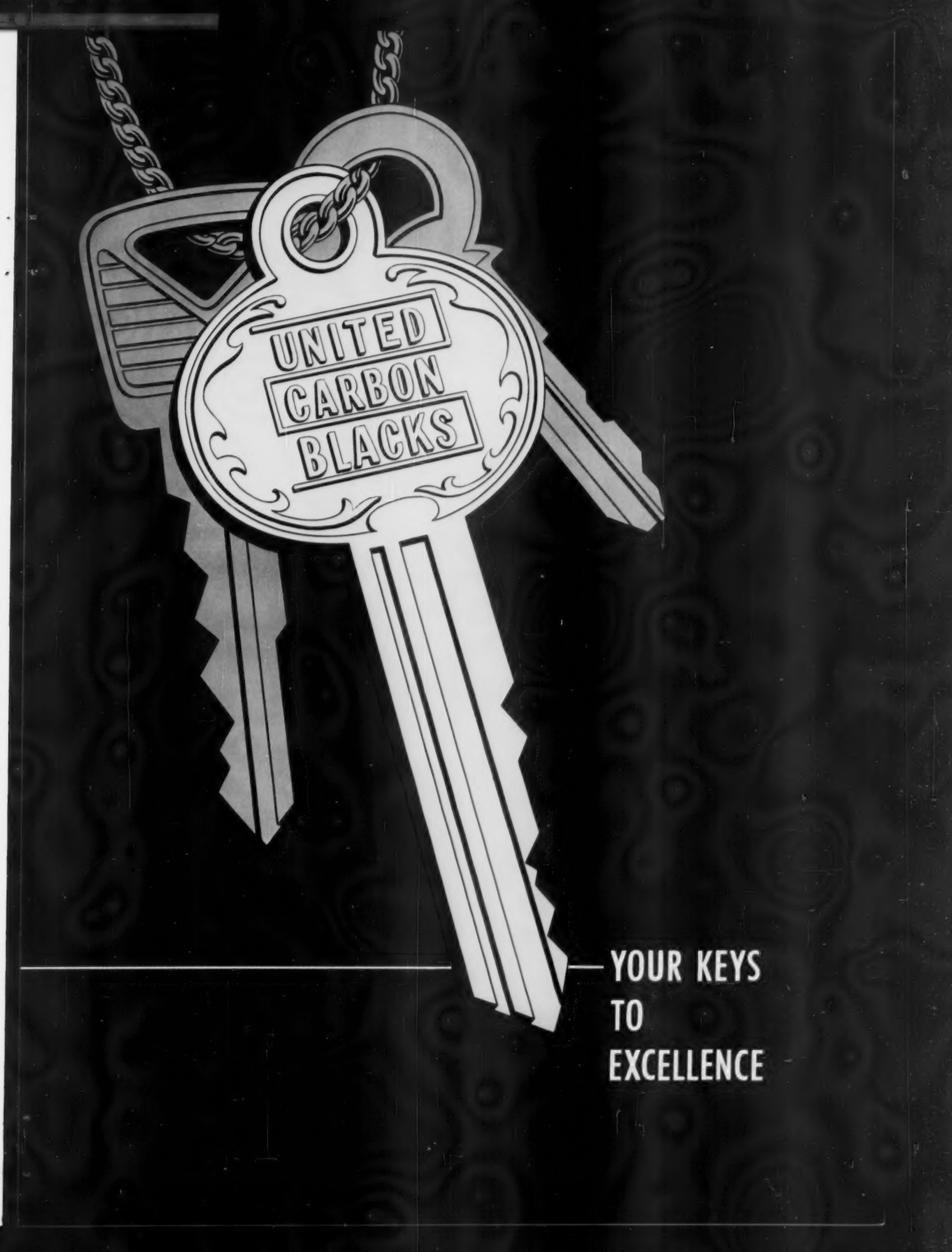

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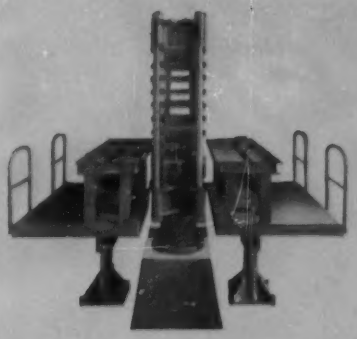

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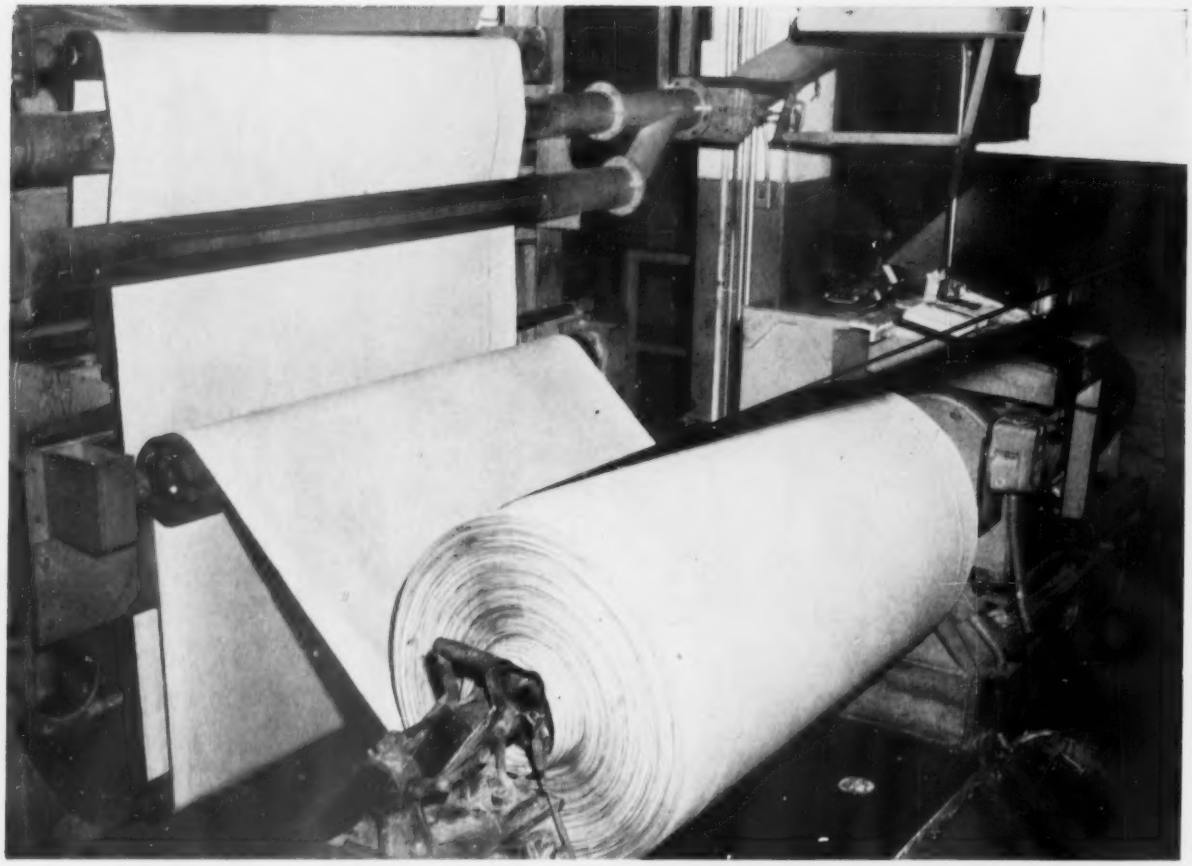

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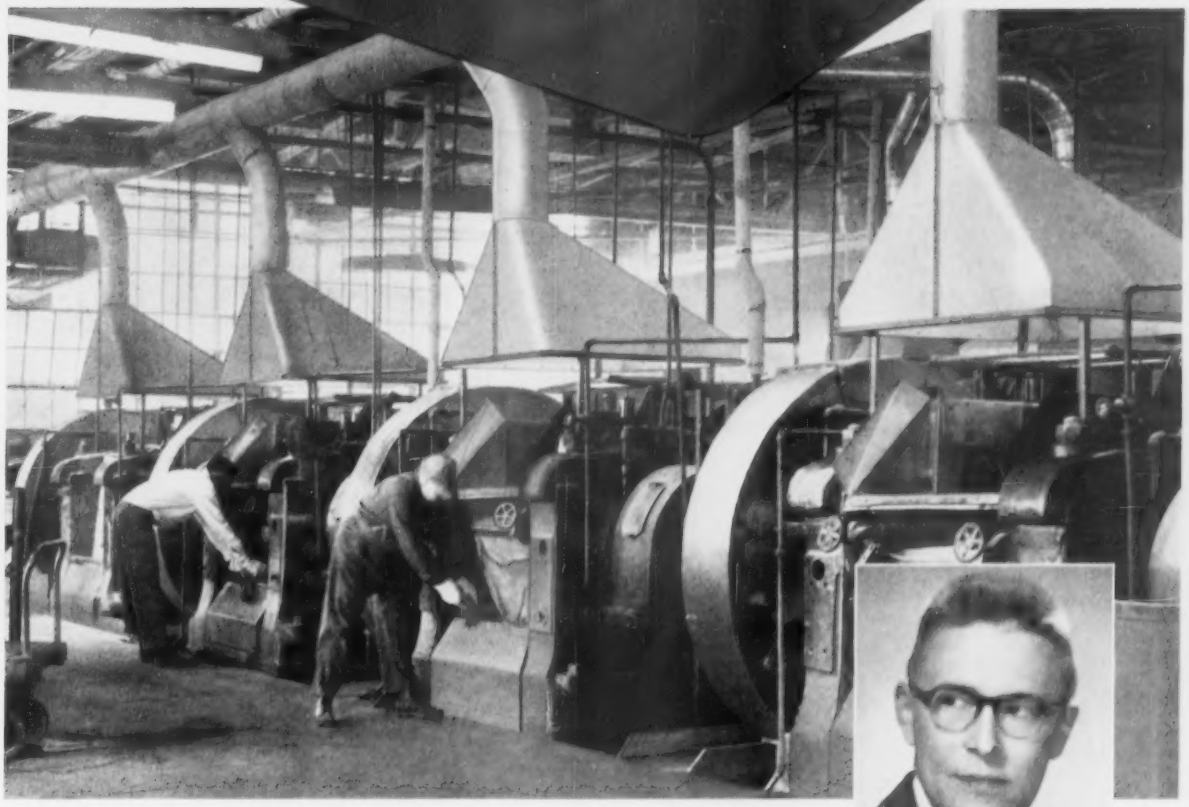
Re-Processed GRS



Wayne F. Nelson heads the research and technical staff of A. Schulman, Inc. and will work with you in meeting specifications with re-processed GRS plant cleanup.

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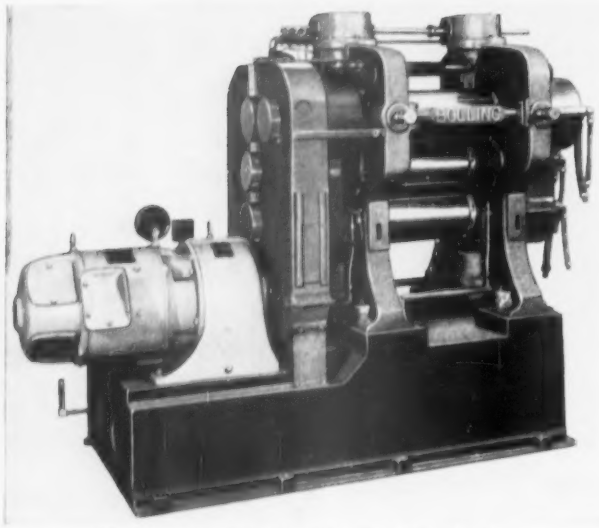

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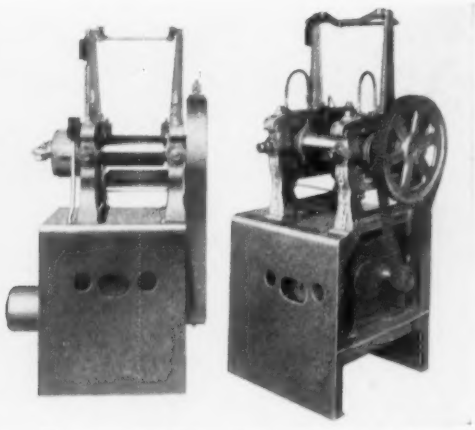

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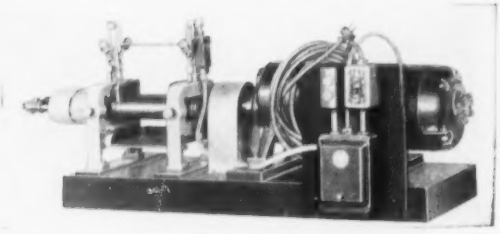

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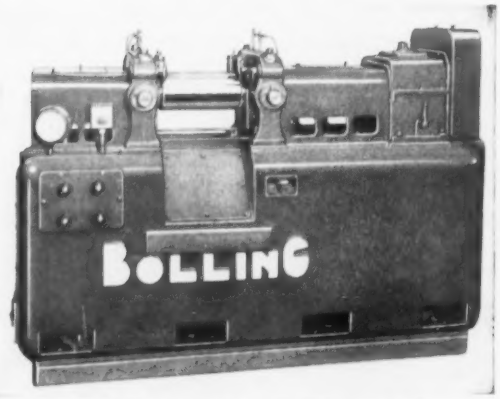

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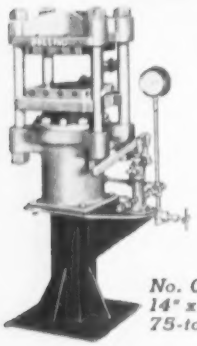

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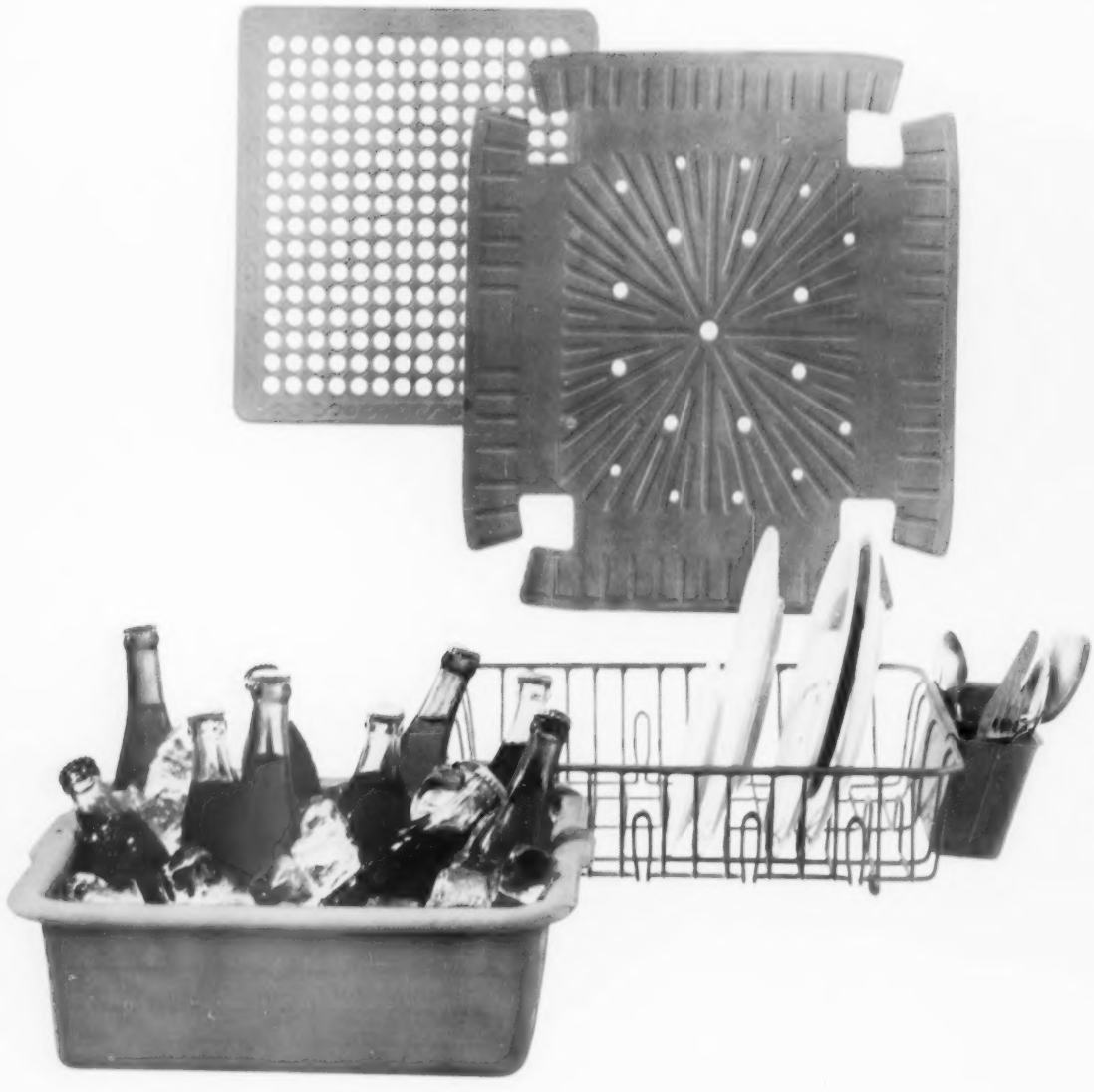

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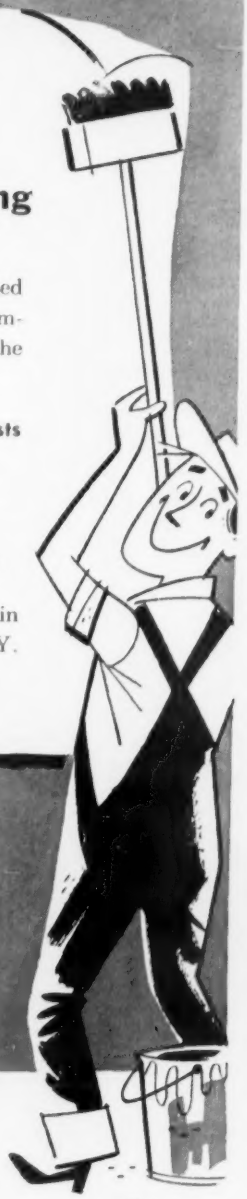

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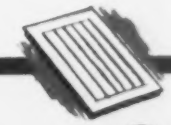

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Composition	Modified Polystyrene
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5000 lbs. to truckloads	13¾c lb.
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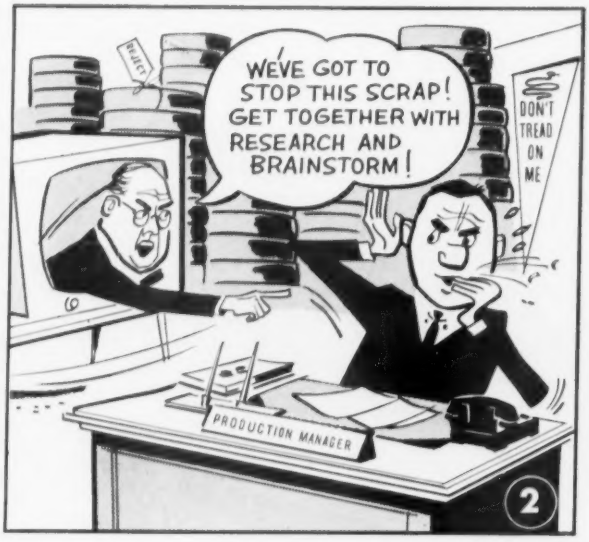
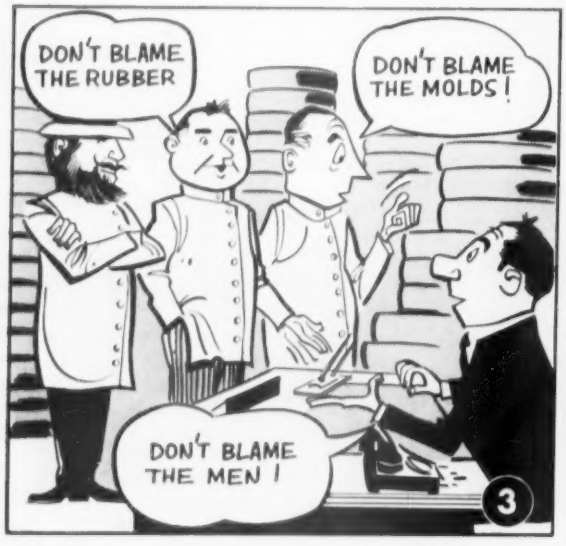
AGENT 36

SILICONE SQUAD

HOW I SOLVED THE SCRAP CAPER

FROM THE OFFICIAL FILES OF DOW CORNING





GOO, YOU'RE THROUGH. YOU'VE PULLED YOUR LAST STICK UP!
OPEN THE MOLD RICHARD!
BRRACK! YOU'LL NEVER GET ME GUM-SHOO!
AGENT 36
5
NO, NO, PLEASE... NO, NOT DOW CORNING SILICONES... NO... OH NO!... ARGHH!
TAKE THAT! AND THAT!
AGENT 36
6
NOW SCRUB HIS (UGH!) DIRTY REMAINS OUT OF THE MOLD.
AGENT 36
7
THAT FINISHES STU GOO, AND YOUR SCRAP TROUBLES, TOO. YOUR MOLDS WILL NEVER GUNK UP WHEN THEY'RE LUBRICATED WITH DOW CORNING 36 EMULSION.
AGENT 36
8
DOW CORNING 36 GIVES QUICK RELEASE, REDUCES SCRAP, IMPROVES SURFACE FINISH, STEPS UP PRODUCTION, CUTS MOLD MAINTENANCE, SAVES MONEY, MAKES EVERYBODY HAPPY!
AGENT 36
DOW CORNING 36
9
YOU CAN'T FIND A BETTER RELEASE AGENT THAN 36 EMULSION. GET YOUR FACTS. DOW CORNING'S THE SOURCE. DO IT NOW!
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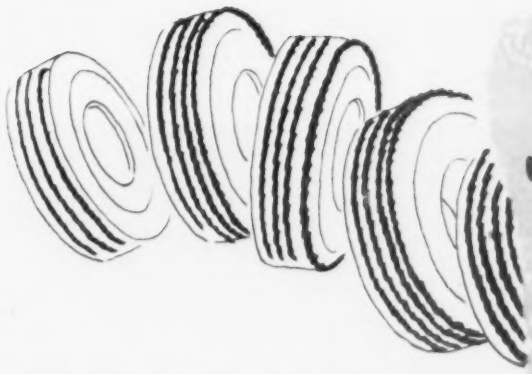

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that clinched
the sale!"

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antiozonants help salesmen make sales

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- Pre-mold addition of UOP antiozonants 88 and 288 improve the rubber in the tire . . .
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- No special handling of tires is needed. UOP 88 and 288 antiozonants are a part of the tire . . . won't chip off, crack, or peel—ever. The protection outlasts the tread.

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Rubber Age

Vol. 81, No. 5 August, 1957

By JOSEPH WINKLER*

American Cello Corp., Ridgefield, N. J.

Effects of Foaming Catalysts on Hydrolysis-Aging of Urethane Foams

An analysis of the role of the activator in the aging velocity of resilient foams, and a report on research for a new activator

THE manufacture of resilient urethane foams is at present one of the main large scale commercial uses for polyisocyanates. Such foams are made predominantly by using N-toluene diisocyanate, containing from 65 to 80 per cent of 2,4 toluene diisocyanate, the balance being the 2,6 toluene diisocyanate isomer. The second basic component for the manufacture of resilient foams is a hydroxyl-terminated polyester containing at least two hydroxyl groups per molecule. Such a typical polyester can be made from one mole of adipic acid, one mole or diethylene glycol, and 0.1 to 0.01 mole of trimethylol propane.

The average properties of this type polyester are:

Hydroxyl number—42 to 63
Acid number—1.5 maximum
Water content—0.1% maximum
Density—1.19 at 77°F.
Flashpoint (open cup)—525°F. (approximate)
Viscosity at 72°F.—7,000 to 12,000 cps (approximate)
Color—Gardener #1 maximum

The toluene diisocyanate is reacted with a polyester and water in the presence of an emulsifier or emulsifiers, an accelerator (catalyst) whereby the schematic reaction is as follows:

$$2\ OCN{-}R{-}NCO + OH{-}Polyester{-}OH \xrightarrow{H_2O}$$

$$-NH{-}R{-}\underset{H}{N}{-}CO{-}O{-}Polyester{-}O{-}OC{-}NH{-}R{-}NH-$$

where R is $> C_6H_3 \cdot CH_3$.

The water reacts separately at the same time with the —NCO group converting it to a reactive $-NH_2$ group and frees CO_2 gas, which serves as a blowing agent.

During the initial years of foam making, which was first concentrated in Germany, so many production problems were involved in making resilient foams of a marketable quality that little attention was given to causes of progressive loss of resiliency, reduction of tensile strengths and increase in compression set which takes place during natural aging. Of course, it was soon recognized that a proper ratio of the diisocyanate to the polyester was an absolute requisite in order to make a slow-aging resilient foam.

It was therefore established that any resilient foam, to be slow aging and resilient, must be made with an isocyanate/polyester and water index of more than 100, preferably 105 to 110. This is the common practice at present. But nothing significant was done to clarify the role of the catalyst in foaming-aging, as long as that catalyst permitted the manufacture of faultless blocks of

* Present address: 223 South Amelia Ave., Glendora, Calif.

Note: This paper was delivered at the Symposium on Isocyanates, held in Minneapolis, Minn., on October 23, 1956, under the auspices of the Society of Plastics Engineers.

a resilient foam without collapse, blow-outs, voids, shrinkage, holes and other imperfections.

Role of the Activator in Aging

Only recently by independent research, information became available which points to the fact that the physical-chemical properties of the activator play a significant role in the aging velocity of resilient foams. Details are available in the brochure published by E. I. duPont de Nemours and Co., Inc., Wilmington, Del., HR-15, May 15, 1956, "Analytical Studies on the Aging of Isocyanate-Based Foams;" and also in corresponding bulletins by the Mobay Chemical Co., St. Louis, Mo.

It was recognized that when the activator used in the foaming process remains in the foam, it acts in reverse, which means that it activates the depolymerization of the foam under the influence of humidity and elevated temperatures. For that reason, it was recommended to use either high-volatile activators, or to heat the foam in a post-curing process in order to facilitate the evaporation of the activator. But post-heating of the foam is an additional operation which requires further equipment and increases the cost of manufacture. On the other hand, high-volatile activators are at the same time too active and difficult to control.

The purpose of this research was not to find out what chemical changes occur in the foam during natural or accelerated aging. This has already been done by DuPont chemists and the results published in the brochure mentioned above. This study therefore was undertaken to find out whether there could be found an activator which would not require removal from the foam by a post-heating process, but which could be tied into the foam structure, and thus inactivated. Also, the purpose of this study was to find out differences in foam properties, depending on the activator used.

In order to make such a comparison under standard conditions, the following materials and procedures were adhered to:

(1) The polyester used was Multron R-18 of Mobay Chemical Co.

(2) The N-toluene diisocyanate used was Mondur RD of Mobay Chemical Co., which is toluene diisocyanate 65/35.

(3) The emulsifier used was Emulphor EL-719 from Antara Chemical Co.

(4) The foam was made in a batchmixer in a two-component, one-shot operation, while the water-emulsifier-activator solution was pre-mixed with the polyester.

(5) Mixing temperature was 25°C.

(6) Mixing time was five seconds. During mixing a slight vacuum was maintained to avoid air-occlusion into the batter.

(7) Mixing speed was 3,000 rpm.

(8) Foaming time (including 5-second mixing time) was 95 to 105 seconds.

(9) Emulsifier amount was 2.5 wp./100 wp. polyester.

(10) Water amount was 3.5 wp./100 wp. polyester.

(11) Mondur TD amount was 48 wp./100 wp. polyester.

(12) Activator amount varied from 0.5 to 3.0 wp./100 wp. of polyester. The exact amount of each activator was established in previous screening tests, the proper quantity being the one which was sufficient to give a foaming time in each case of from 95 to 105 seconds.

As can be seen from this itemization, the only variable was the type and the amount of the activator. All other conditions remained the same for all foaming experiments. It should be mentioned here that 95 to 105 seconds foaming time is not an arbitrary figure. This figure is a result of actual practice during the last three years of commercial foaming, in which it was established that the best foaming conditions are those during which the foaming time is not shorter or longer than 95 to 105 seconds for a 2-lb./cu.ft. resilient foam.

This foaming time is measured from the moment when all the components are mixed together to the moment when the foam stops rising, which is marked often by a release of an excess gas bubble through a small blister on the surface of the foam skin. A shorter foaming time than 95 to 105 seconds for a foam of a density from 1.8 to 2.2 lb./cu.ft. leads often to surface blowouts, while a longer foaming time is inducive to the creation of interior voids, bottom splits, and also often produces foam collapse.

This quantitative and qualitative arrangement in the foam making is very similar to the one which is actually being used in the commercial manufacture of resilient foams. Therefore, the obtained results are, with small corrections in formulations, reproducible on a commercial foaming machine. This means that the obtained results in this study reflect to a large degree results which may be expected in foams made on a commercial machine.

All foams produced under these conditions have had a very similar density in the limits of from 1.9 to 2.3 lb./cu.ft., and an average cell size of from 1/64 to 1/32 of an inch. However, due to different activators used in this study, other properties of the foams varied considably, especially the textures of the foams which were from very soft to firm-elastic. Other physical differences in properties of these foams are shown in the acompanying table in the lines with an aging time of 0.

Selection of the Activators

For making of resilient urethane foams, numerous activators (catalysts) were proposed in previous publications and patents. But I have selected only those activators which belong to one class—the class of tertiary amines, because activators from this class are being generally used in resilient foam manufacturing.

From the tertiary amine class, the following five groups of compounds have been investigated:

(1) Pure tertiary amines	— 2	compounds
(2) N-alkyl-morpholines	— 3	"
(3) Tertiary aminoalcohols	— 3	"
(4) Tertiary aminophenols	— 2	"
(5) Tertiary esteramines	— 2	"

Eleven of those twelve tested tertiary amines are known commercial products, only the last one (No. 12) is a new compound synthesized by me and used for the first time in this study. From the first group I selected:

(1) Triethylamine—B.P. — 90°C./760mm. Hg—made by Union Carbide Corp.

PHYSICAL PROPERTIES OF FOAMS MADE WITH DIFFERENT ACTIVATORS BEFORE AND AFTER AGING

Foam Sample	Aging Period (Days)	Density (lb./cu. ft.)	Tensile Strength (psi)	Elongation 25°C.(%)	Set 25°C.(%)	Tear Resist. (lb./in.)	Compr. Set 70°C., 22 hr., (% thick.)	Compr. Defl. in psi at 25% Defl.	Compr. Defl. in psi at 70% Defl.
	0	2.2	20	205	2	6.0	3.5	1.1	2.2
1	7	—	19	210	3	5.0	3.0	1.2	2.3
	14	—	17	220	5	5.0	4.0	1.2	2.2
	0	2.1	15	150	1	4.0	4.5	1.0	1.9
2	7	—	14	160	3	4.0	5.5	1.1	1.9
	14	—	11	165	5	4.0	7.0	1.0	2.0
	0	2.15	23	160	2	5.0	7.5	0.0	1.9
3	7	—	20	175	3	5.5	9.0	1.0	2.0
	14	—	18	185	4	4.5	12.0	0.9	2.1
	0	2.10	22	170	4	5.5	8.0	0.7	1.9
4	7	—	20	180	5	6.0	10.0	0.8	1.7
	14	—	18	195	6	5.0	13.0	0.9	1.7
	0	2.25	14	260	9	3.5	9.0	0.6	1.0
5	7	—	10	260	15	5.0	15.0	0.4	0.6
	14	—	8	310	21	2.0	25.0	0.2	0.1
	0	2.2	17	210	7	5.0	6.0	0.75	1.40
6	7	—	16	225	9	5.0	7.5	0.80	1.35
	14	—	14.5	205	12	4.5	10.0	0.75	1.35
	0	2.1	22	235	6	4.5	4.0	0.70	1.35
7	7	—	20	250	7	4.0	5.5	0.80	1.25
	14	—	17	205	9	4.5	7.5	0.80	1.25
	0	2.0	21	260	10	4.0	8.0	0.60	1.10
8	7	—	23	270	12	4.0	13.0	0.50	0.90
	14	—	10	210	19	3.0	19.0	0.35	0.60
	0	2.3	16	250	9	3.0	9.0	0.55	1.0
9	7	—	17	290	15	2.6	14.0	0.50	0.8
	14	—	16	220	21	2.0	20.0	0.30	0.6
	0	2.1	17	255	10	3.5	8.5	0.65	1.1
10	7	—	15	280	12	3.0	12.0	0.60	0.9
	14	—	17	210	19	2.5	18.0	0.55	0.8
	0	2.0	21	175	8	6.5	3.5	1.15	2.2
11	7	—	20	190	9	6.0	3.5	1.10	2.1
	14	—	17	155	8	5.0	5.0	0.90	1.9
	0	1.9	28	245	8	7.0	5.0	1.10	2.3
12	7	—	30	260	9	7.0	6.0	1.05	2.1
	14	—	27	250	10	6.5	6.5	0.95	2.1

(2) N,N′ dimethylcyclohexylamine—B.P.—139° C./760mm. Hg—from a European manufacturer.

From the the second group I selected:

(3) N-methylmorpholine—B.P. — 115° C./760mm. Hg—made by Union Carbide Corp.

(4) N-ethylmorpholine—B.P.—138°C./760mm. Hg—made by Union Carbide Corp.

(5) N-cocomorpholine—B.P.—135 to 165° C./5mm. Hg—made by Armour Chemical Co.

From the third group I selected:

(6) Dimethylaminoethanol—B.P. — 135° C./76mm. Hg—made by Industrial Division, Pennsalt Chemicals Corp.

(7) Diethylaminoethanol—B.P. — 162° C./760mm. Hg—made by Industrial Division, Pennsalt Chemicals Corp.

(8) Dibutylaminoethanol — B.P. — 222 to 234° C./760mm. Hg — made by Industrial Division, Pennsalt Chemicals Corp.

From the fourth group I selected:

(9) Dimethylaminomethylphenol—B.P.—80 to 130° C./2mm. Hg—made by Rohm & Haas Co.

(10) 2,4,6 tri-(dimethylaminoethyl) phenol—B.P.—145 to 155°C/1mm. Hg—made by Rohm & Haas Co.

From the fifth group I selected:

(11) Bis (diethylaminoethyl adipate)—B.P.—177 to 180° C./1mm. Hg—from a European manufacturer.

(12) Tetrakis (2-diethylaminoethyl) ethylene dinitrotetra acetate—B.P.—189 to 195°C./1mm. Hg—a new compound first synthesized by me. The synthesis was confirmed through the courtesy of Industrial Division, Pennsalt Chemicals Corp.

The resulting resilient foams are identified by the same numbers as the activators used, and the results of tests made on those foams before and after aging for 7 and 14 days are presented in the table. The foams were: (1) Glossy, firm-elastic with small ruptures; (2) Coarse, with small ruptures; (3) Medium soft, with large inner cracks; (4) Soft, with bottom splits; (5) Very soft, with bottom splits; (6) Medium soft, with some small inner splits; (7) Medium soft, with some small inner splits; (8) Medium soft, with some inner irregular streaks and voids; (9) Soft, with irregular cell structure; (10) Medium soft, with almost no defects; (11) Firm, with uni-

form cell structure and no defects, and (12) Firm, with perfect cell structure.

Analyzing the Results

In analyzing the results presented in the table we have to bear in mind that the accuracy of the presently available testing method for urethane foams is not very good, and testing results obtained with the same samples in different laboratories, and also by the same laboratory, showed deviations ±25% and sometimes more. When taking this low testing accuracy into account, the only reasonable deductions which can be made from the presented testing data are the ones which show considerable differences among the twelve tested foams.

Such considerable differences are seen in tensile strengths, compression set, elongation set, and in compression-deflection for fresh foams after 7 and 14 days of aging. There are, of course, considerable differences in initial tensile strength, elongation and compression set and compression-deflection among the different foams, which varied from soft-elastic to firm-elastic.

In looking over the table from this point of view, and comparing those results with the boiling or distillation temperatures of the individual activators, we can see a fairly good relationship between the degree of aging and the volatility of the activator. It seems that foams tested soon after the skin surface has been cut off, and which have been foamed with a low-boiling activator, age more slowly than foams made with a higher boiling activator. This is evidenced by comparing foams 1 and 2 in Group I, and foams 3, 4, and 5 in Group II.

Less pronounced are the results in Group III for foams 6, 7, and 8. In this group, however, all the activators contained one active hydrogen in its OH group, which presumably during the foaming allowed a partial tie-in of the activator into the foam, and thus eliminated most of its later depolymerization activity.

Very pronounced, however, is the aging of the foams 9 and 10 made with activators from Group IV. Those two activators have a relatively high boiling temperature and consequently they remain much longer in the foam because of slowness of evaporation. While they do contain an active hydrogen in their phenolic OH group, it seems that this active hydrogen was not tied in sufficiently into the foam micro-molecule.

In foams of Group V, 11 and 12, we see two entirely different results. Those two activators both belong to the group of aminoesters. Both are high boiling liquids and should, therefore, give foams susceptible to humidity aging. On the other hand, aminoesters are known to be the most reliable foaming activators because of the uniformity with which they activate the complicated primary and secondary reactions between the polyisocyanates, polyesters and water. This uniformity is highly important; otherwise, we obtain foams in which the CO_2 production would be faster or slower than the build-up of the urethane polymer which would result in collapses or blow-outs of the foam.

As a matter of fact, activator 11 is presently the most widely used activator in commercial manufacture. But it was recently recognized that this activator is deficient because it makes foams susceptible to hydrolysis-aging in a higher degree than, for example, foams made with activators 4 and 6 respectively. Those two low-boiling activators, although giving aging resistant foams, still present problems in foam manufacture. Their activity is somewhat difficult to control, and as a result, very often foams have surface blow-outs, holes and other imperfections.

Properties of a New Activator

One of the purposes of this study was, as it was mentioned in the beginning, to find an activator which would be reliable in foaming like activator 11 and which would not afterwards cause premature aging. For such an activator, I have taken into consideration also the teritiary aminoesters group, but with the requirement that it should completely tie-in during the foaming process into the foam macro-molecule.

It is known that alkalinic salts of ethylenediamine tetra acetic acid have valuable chelating properties. Considering this, I decided to make a tetra ester from this acid and diethylaminoethanol. To the best of my knowledge no such ester had ever been made. I succeeded in making such an ester of high purity, which was later, upon my indications, reproduced through the courtesy of the Industrial Division, Pennsalt Chemicals Corp. Here are the properties of activator 12:

Appearance	clear, medium viscous, yellow oily liquid
Odor	faint, not unpleasant
Water solubility	less than 0.1%
Specific gravity at 20°C.	1.036
Refractive index at 25°C.	1.4274
N-content (Kjeldahl)	11.88%
Purity	97.50%

Activator 12, being a high molecular esteramine with the lowest relative volatility, when used in the amount of 3 wp./100 wp. of polyester, gave excellent resilient, medium-firm foams with superior properties, as is seen from the accompanying table. We see also from this table that its aging properties have been superior to any other foam from No. 1 to 11. As a matter of fact, a 14-day aging period did not affect its properties to any appreciable degree.

This proves my initial assumption that such a tetra ester or diethylaminoethanol and ethylenediamine tetra acetic acid should have properties allowing for its tie-in into the foam during the foaming process. What actually happens is a matter for further investigation. I believe that this specific tertiary esteramine may contain at least two, and perhaps up to four, active hydrogens in each molecule which react with the polyisocyanates, and consequently the activator becomes inactivated.

A simple experiment seems to prove this assumption. When mixing under a dry nitrogen blanket equal weight parts of activator 12 and toluene diisocyanate at room temperature, the resulting clear low-viscose solution, by itself, without further heating, during an hour heats up to 50°C. and solidifies to an amber-colored resin. No such resinification takes place when mixing equal parts of activator 11 and toluene diisocyanate.

Degradation of resilient polyester urethane foams during service is attributed to the combined action of temperature and humidity—humidity being the more im-

portant factor. This degradation of resilient polyester urethane foams is accelerated by the presence of residual alkalinic activators used in the foaming process.

This study presents the results of foaming of typical resilient polyester foams with twelve different activators, and their properties before and after aging for seven and fourteen days are tabulated and compared. Those twelve catalysts belong to five classes: (1) Pure tertiary amines; (2) N-alkylmorpholines; (3) Tertiary aminoalcohols; (4) Tertiary aminophenols, and (5) Tertiary esteramines.

It has been found a direct relationship exists between the volatility of the catalyst and aging susceptibility of the foam, in which high-volatile catalysts produce low-aging foams and vice versa. Foams with good hydrolysis-aging properties result when using high-volatile activators like triethylamine, N-methylmorpholine or dimethylaminoethanol, but being at the same time of a high reactivity, they are more sensitive to fluctuations of working conditions.

As tertiary esteramines are more suitable for a reliable commercial foaming of uniform, low-density foams, attempts have been made to find a proper tertiary esteramine which, after catalyzing the foaming reaction, would be inactivated by tying it into the foam itself. Such an activator, which is a tetra ester of diethylaminoethanol and ethylenediamine tetra acetic acid, has been for the first time synthetized and tested in this respect. The resulting resilient foam has superior properties which do not change even after 14 days of humidity-aging.

New Stack Bin Arrangement Prevents Pellet Adhesion

A UNIQUE new bin arrangement for storing and handling rubber pellets has been announced by Richardson Scale Co., Van Houten Ave., Clifton, N. J. The firm's new stack bins are designed to solve what has been a major problem in the handling of rubber pellets—the tendency of large amounts of the pellets to stick together in storage.

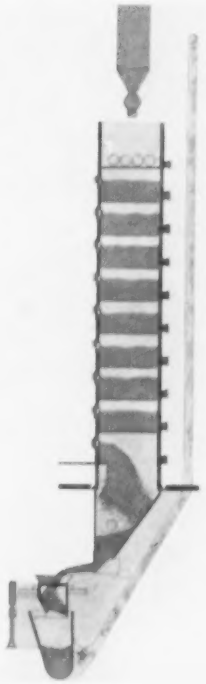
The unit comprises a vertical series of bins, each of which holds 2,000 pounds of pellets. Pellets are transferred from bin to bin by pneumatic discharge gates which form the bottoms of the individual bins. These gates are actuated by flow control switches and protected by electrical interlocks.

The initial installation, designed for a major rubber processor, consists of a series of 80 of these bins, arranged in four double stacks over four automatic scales. It is part of a Richardson Select-O-Weigh automatic system for controlling storage, proportioning and delivery to mixers of different grade pellets ranging from dust size to ¾ inch.

Each bin is a separate steel unit measuring 6 feet long, 5 feet wide and 37 inches high. The discharge gate is mounted on rollers and operated by a pair of pneumatic pistons with a stroke length equivalent to the bin length. Tracks for the rollers extend beyond the bin for the length of the gate. Bins have straight sides to prevent sticking of pellets. A seal is located at the slide opening to keep pellets from catching on the slide during discharge.

Pellets, coated with talcum, are delivered from the pelletizing operation by Fuller pneumatic conveyors to a feeder above the top bin in the stack. When this bin is full, the pellets exert pressure against a diaphragm type flow control switch. If the bin below is empty, another switch actuates the pistons on the discharge gate. The gate rolls open and pellets are discharged by gravity.

After a specified time interval, predetermined to assure complete discharge, the bin gate closes and the bin is ready for another load. The same transfer sequence is followed through succeeding bins, until the pellets reach the bottom bin in the stack.



Bin mechanisms are interlocked so that storage-transfer operations can be carried on concurrently at several points on the same stack. However, tie-in between Richardson Flow Control Switches and bin interlocking switches prevents slide gates of two bins in sequence from opening simultaneously. In this way, there can be no over-loading of any bin or dropping of material from more than one bin at a time.

When all ten bins in a stack are loaded to capacity, a switch cuts off the feed conveyor at the top of the system until the time when the top bin is ready to receive another load.

A graphical technique for determining the

Thickness of Cast Latex Films

By JAMES T. HILL, GUY A. HANKS and JOHN W. HODGE, JR.

Army Prosthetics Research Laboratory,
Walter Reed Army Medical Center, Washington 12, D. C.

A simple method for predicting the thickness of a latex film cast in a gypsum mold

GYPSUM molds are generally used to cast commercial articles from synthetic or natural rubber latex. The mechanism of film formation against a gypsum mold is usually considered to be due to absorption of water through the minute gypsum mold pores, the size of which prevents passage of the solid polymer particles. The polymer film is deposited as a more or less porous mass through which diffusion of water may occur.

Subsequent drying of the film may take place simultaneously from both surfaces, i. e., through the plaster mold and from the side exposed to the atmosphere. Since this is more advantageous than casting against glass, where drying occurs through one surface only and difficulty is encountered in obtaining flaw-free films, the Army Prosthetics Research Laboratory has for some time used gypsum molds for casting test films from synthetic latices [Blevins, T. B., Wright, W. S., and Leonard, F., *Anal. Chem.*, Vol. 22, p. 205, (1950)].

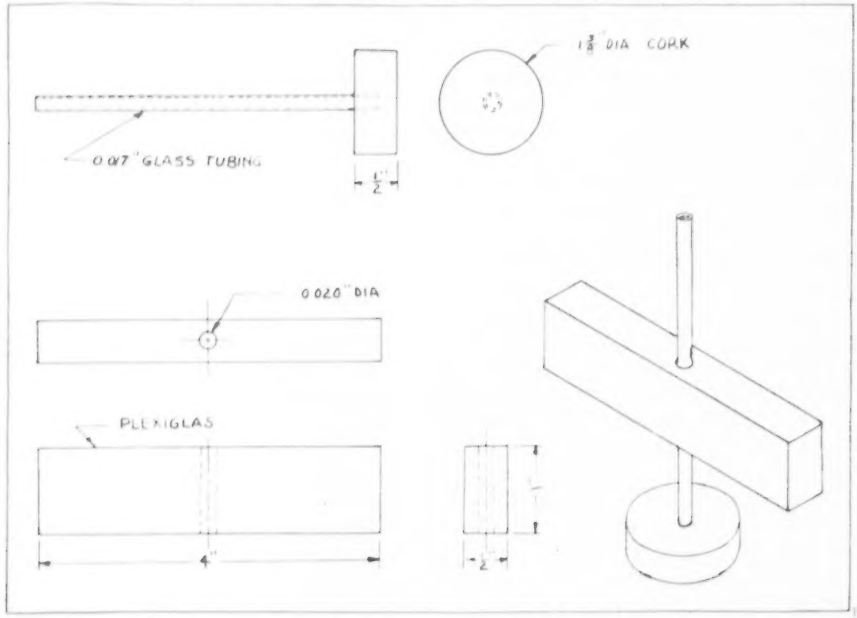
During the course of an investigation of the mechanical properties of emulsion polymerized terpolymers of butyl acrylate, methylmethacrylate, and methacrylamide, it became of interest to develop a simple method for predicting the thickness of films cast from these latices in female gypsum molds. The method and its applicability are herein described.

Principle and Experimental Apparatus

As water is removed from the latex by capillary action of the mold pores, the latex height decreases. This height drop should be directly proportional to the film thickness build-up on the mold wall if one assumes a negligible amount of film deposit by coagulation and no evaporation.

The apparatus designed to test this theory is called the 3H Liquid Level Indicator and was fabricated of the following: one piece of Plexiglas 4 x 1 x 0.5 inches; one piece of glass tubing with an outside diameter of 0.017 inch and a length of 6¼ inches, and one piece of cork

FIG. 1—Schematic of the 3H Liquid Level Indicator and its component parts.



with a diameter of 1⅜ inches and a thickness of 0.5 inch.

Construction. A 0.020-inch hole was drilled through the Plexiglas, as shown in Figure 1. The glass tube was firmly fitted one-fourth inch into the center of the cork, which was coated with Epon 815 and curing agent T in a 4 to 1 ratio to close the pores. The pieces were assembled as shown at the right of Figure 1. The clearance between the glass tube and the Plexiglas is 0.003 inch. In use, the Plexiglas is rested on top of the mold with the cork floating in the latex.

Gypsum mold fabrication. Gypsum in the form of Hydrocal A-11 (U. S. Gypsum Co.) and tap water were mixed in a 3 to 1 ratio. This slurry was deaerated for two minutes under 27 ± 2" Hg vacuum. The slurry was poured into the mold form, which was an open-ended hollow Plexiglas cylinder with a height of 10 inches, an inside diameter of 4 inches, and an outside diameter of 4¾ inches. It contained a foam-filled vinyl cylinder with an outside diameter of 2.85 inches and a height of 8.85 inches concentrically spaced inside. The vinyl filler was held stationary by fitting the end into a piece of Plexiglas 2.85 inches thick. The Plexiglas cylinder was placed on this flat sheet concentrically spaced around the filler.

The mold form was filled with the gypsum slurry until the end of the vinyl filler was covered to a depth of at least one inch. The gypsum was allowed to "set-up" and cool for 2 to 3 hours before the Plexiglas and vinyl filler were removed.

Measurements. Thick-walled cylindrical gypsum molds were marked on the inside wall 8 inches from the bottom. The dimensions of these molds were: inside diameter, 2.85 inches; outside diameter, 4.75 inches; inside height, 8.6 inches, and outside height, 10 inches.

Filtered latex was poured into the molds and filled to the 8-inch mark. A stop watch was started simultaneously with pouring. The Liquid Level Indicator was immediately floated in the latex. The initial height measure was taken using the top of the glass tube as the reading point by means of a cathetometer (an etch mark on the tube may also be used). Thereafter, height measurements were frequently made during the entire casting cycle.

The latex was allowed to cast for a minimum of 60 minutes. After casting, the excess latex was poured out, the mold inverted and drained for 20 minutes. The film was then dried by infra-red heat. Ten thickness measurements were made using an Ames Gage. A total of four experiments were run using this procedure. They were designated as H-121-11, H-117-63, H-121-6 and H-121-7.

Results and Evaluation

Determination of height at zero time. The height readings versus time for the casting cycle were plotted. Figures 2 and 3 are graphs of typical plots. By extrapolating to zero time, an initial height value was obtained. Visual observation of height at zero time minimized any large extrapolation error.

Determination of film thickness versus latex height drop. The numerical difference between the zero height (H_o) and the final height (H_f) versus the measured film thickness for Experiment H-121-11, graphically represented in Figure 2, was plotted. A linear relationship between latex level drop and film thickness was assumed, and the data used to determine the calibration curve shown in Figure 4.

Using this graph, values of film thickness were determined from latex height drop data for Experiments H-

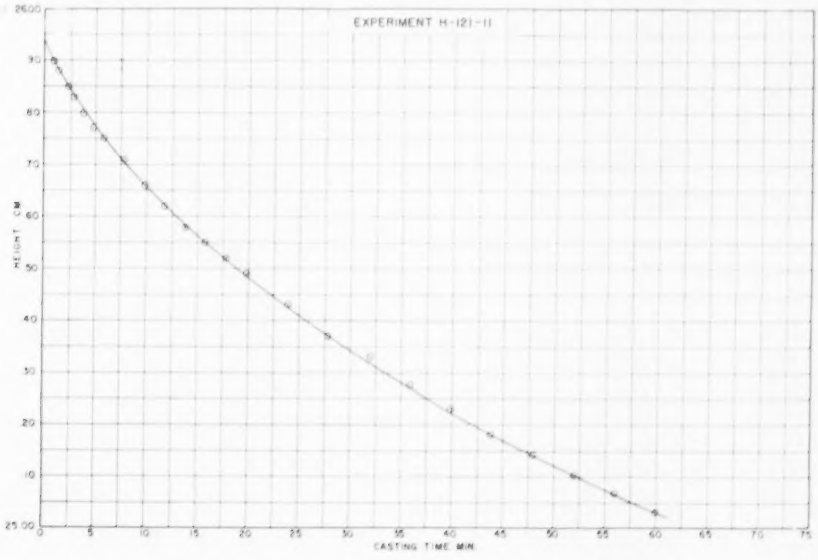


FIG. 2—Height versus time for casting cycle of Experiment H-121-11.

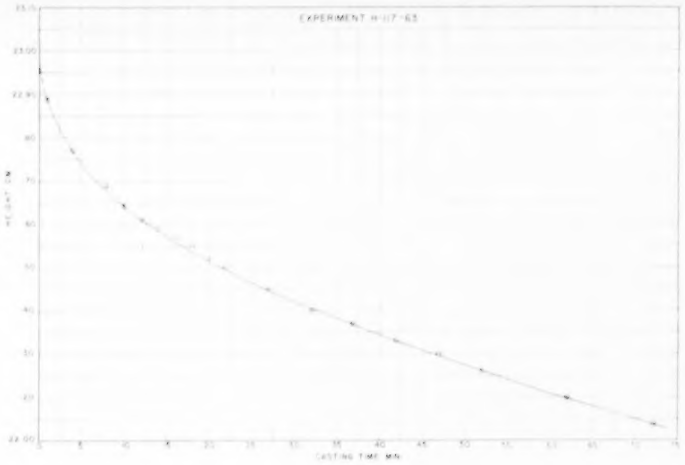


FIG. 3—Height versus casting cycle time of Experiment H-117-63. Figures 2 and 3 are graphs of typical plots. Variation of only one-half mil between predicted and actual measurements substantiates the assumption that film thickness is linearly related to latex height drop through the range measured.

117-63, H-121-6 and H-121-7. These graphically determined values compared with the actual measured film thickness as follows:

Experiment No.	Graph thickness (mils)	Measured thickness (mils)
H-121-11	Calibration curve	31.25
H-117-63	42	42.50
H-121-6	24	24.00
H-121-7	17	17.50

The variation of only one-half mil between predicted and measured values is within experimental error and substantiates the assumption that the film thickness is linearly related to latex height drop through the thickness range measured.

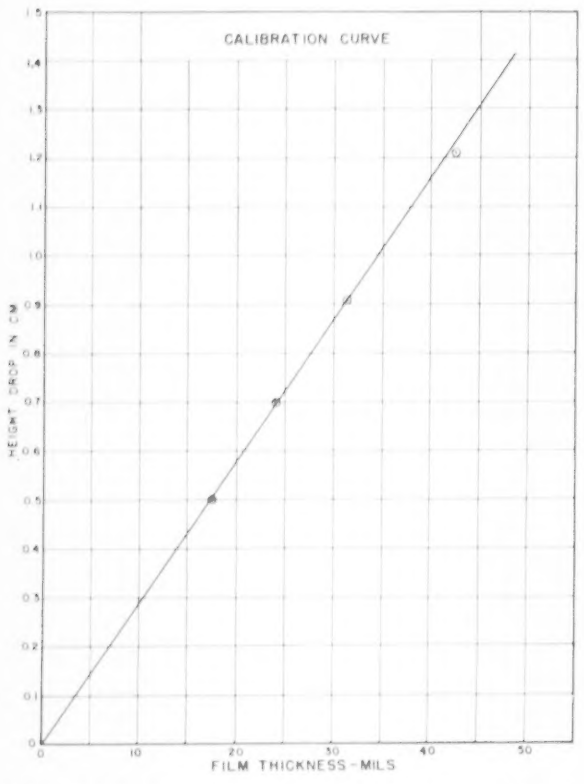


FIG. 4—Calibration curve derived from data of Experiment H-121-11.

Application of Method

This method of film thickness determination may be used regardless of shape or size of the porous mold, but a new calibration curve must be determined for each different type and size. As latex height drop is dependent on total solids of the latex, a change in solids content would also require a new calibration curve. As liquid level drops appears to be linearly related to solids content, the recalibration may be made either mathematically or experimentally.

After an initial calibration curve has been made for a particular type porous mold, the following procedure may be used to cast films of any desired thickness:

(1) Pour filtered latex into a mold cavity, simultaneously starting a stop watch.

(2) Fill the mold to calibration height.

(3) Record height readings every minute for 10 minutes.

(4) Using these values, plot a curve of height versus time, and extrapolate to zero time to determine the initial height reading, H_o.

(5) From the mold calibration curve determine the height drop ($\triangle H$) corresponding to the desired film thickness.

(6) The initial height reading, H_o, minus the desired height change will give the final height, H_f, for a desired film thickness.

Summary

A method of casting films from latex dispersed polymers of any desired thickness was developed by varying casting times and liquid level drop. This method is applicable to any type porous mold used in a casting process.

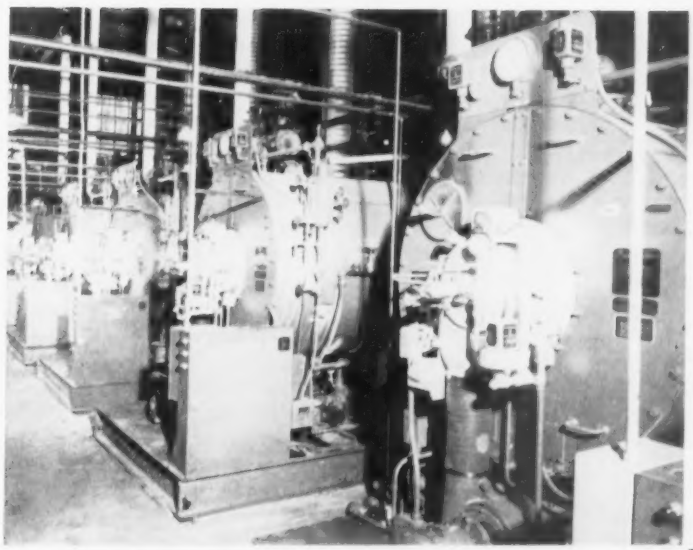
Predicted film thicknesses were in agreement to ± 0.5 mil with actual measurements. The indicated difference is within experimental error, thereby substantiating the assumption of a linear relation between the liquid level drop of the latex and film thickness.

How Johnson Rubber Co. Used A Battery of Boilers

To Solve Its Steam Problem

By HARRY HAFFNER

Plant Engineer, Johnson Rubber Co., Middlefield, Ohio



A view of five of the Powermaster boilers which compose the battery of ten. The complete automatic unit services such processing machinery in the Johnson Rubber Co. plant as the extruded rubber autoclave seen at the right in the process of loading by two workmen.

PROFITS were going up in smoke at the Johnson Rubber Co., Middlefield, Ohio—inadequate boilers were the saboteurs. The company, which produces high quality rubber molding for automotive and household appliance manufacturers, was being forced to spend a minimum of $26,000 annually for operation, maintenance, and repairs, as well as the attendance of licensed firemen for its four ancient boilers.

In addition, the equipment suffered breakdowns, required expensive ash handling, and numerous cleanings and repairs. Also, a large amount of costly space had to be set aside for coal supplies. Even more important, there were indications that the old equipment was no longer adequate for the job of providing controlled amounts of high pressure steam for scientific rubber cures.

Heating engineers were called in to study the problem. At length, they presented an unusual solution which the company subsequently accepted. The old equipment—three 200-horsepower coal-fed boilers, and one 500-horsepower oil burner—was removed. It was replaced by ten 80-horsepower, packaged boilers, which operate on number six industrial fuel oil, set up in a battery. The new boilers were Powermasters, made by Orr & Sembower, Inc. of Reading, Penna.

Ordinarily, three or four large new boilers might have been detailed for the job. But the heating engineers were convinced that a large number of small boilers set up in a battery had several unique advantages to offer Johnson Rubber. The first was greater dependability. With only three boilers, a shutdown in one would take a big bite out of production. A number of the autoclaves where extruded rubber products were cured would have to be closed pending repairs. However, with the battery of ten boilers, a shutdown of one or two would make no noticeable decrease in production.

Another advantage that Johnson Rubber has obtained by using the battery boiler system is increased efficiency in supplying differing steam pressures to the various parts of the plant at all times. Although it is also possible

to provide different quantities and pressures of steam with a few large boilers, Johnson Rubber found it to be less efficient and more costly than with the battery of ten boilers.

A third advantage was the ability to handle periodic ups and downs in the need for steam. It is much less costly to close down a few small boilers when steam demands are low than to run a few large boilers at a fraction of their capacity.

Still another benefit of having a number of small boilers in a battery is that in many areas, such as Ohio, laws governing the operation of boilers do not require the attendance of licensed firemen for small boilers, whereas firemen are required for large boilers.

Features of Packaged Boilers

Packaged boilers are so-named because they are complete, automatic units. Unlike conventional installations, the boiler, burner, blower, fuel pre-heaters, pumps, and other auxiliary equipment are built at the factory to work together as a unit.

The packaged boiler is completely assembled and fire tested at the factory to insure maximum output of steam per unit of fuel used. When delivered to the plant it is ready to go to work as soon as fuel, water, electric, steam and flue connections are made.

Because it is assembled at the factory, the packaged boiler can be built to particularly close tolerances. This makes for more efficient operation—fewer wear points and consequently fewer shutdowns. This also offers a particularly clean operation, with no dirt or soot, and fewer cleanings are necessary. Many units similar to those installed in Johnson Rubber operate 24 hours a day with only three or four cleanings needed a year.

The equipment is fully automatic, with factory-installed controls protecting it against low water damage, excess pressure, flame failure, motor overloading, short circuits and other hazards. The controls guide every operation from start until steam is produced. This, of course, means a minimum of human supervision, thus helping to reduce maintenance costs.

The combustion control automatically clears the combustion chamber before ignition. It guides the ignition itself and the supply of fuel. Should a shutdown occur, a blower automatically cleans out the combustion space. A modulating control adjusts fuel and air in just the right ratio, and an automatic control governs the supply of water to the steam boiler. Both the main and the pilot flame are controlled electronically in the combustion chamber.

One of the features particularly important to Johnson Rubber is the ease with which cleanings and inspections can be made. With the many benefits of preventive maintenance, it is important to make frequent inspections of all plant equipment so that costly downtime can be avoided. These inspections are simple to make with the Powermaster packaged boiler. The back cover of the boiler may be swung out conveniently on a davit arm, and the front cover can be removed without disturbing the burner, blower or other equipment.

A unique feature is that the boiler requires no smoke stack. Forced draft fans permit accurate control of combustion air and all that is needed is a small vent for exhausting flue gases smokelessly.

The automatic features of the system permit efficient operation at various steam load requirements. The curing ovens draw large quantities of steam intermittently, so the boilers must react promptly to both high and low steam demands. The Powermasters are designed to handle fast changing steam requirements—from 20 to 100 per cent of capacity—smoothly and efficiently.

Coming Next Month . . .

Elastomers for Use in Radiation Fields. I. Cracking of Stressed Elastomers by Induced Gamma Radiation—By Robert Harrington, Hanford Laboratories Operation, General Electric Co., Richland, Wash.

How are elastomers and rubberlike plastics affected by exposure to ionizing radiation? What effect do compounding ingredients have on behavior of these materials? These and associated problems are the subject of a series of articles beginning in September.

Compounding Butyl Rubber for Resistance to Compression Set—By John Prendergast, Butyl Technical Service Laboratory, Thiokol Chemical Corp., Trenton, N. J.

A report on the use of certain organic sulfide compounds as curing agents for butyl rubber to produce improved compression set properties.

Permeability of Rubber to Organic Liquids—By William J. Mueller, Battelle Memorial Institute, Columbus, Ohio.

A report on the factors which affect the permeability rate of rubber by organic liquids as revealed by work with five types of synthetic rubber.

Questions and Answers on Latex and on Antioxidants and Antiozonants.

A transcript of the questions put to the panelists at the June meeting of the Southern Rubber Group, and the answers they gave to the problems presented them.

PROCEDURE IN OBTAINING PATENTS Part 4

By Kenneth W. Brown

Assisted by Arthur S. Collins and Curt B. Beck

Godfrey L. Cabot, Inc., Boston, Mass.

The Patent System

The series is concluded with a discussion of reading and interpreting patents, a warning about public use of an invention before patent application, and some points on trademarks and copyrights

THE U.S. patent system was established by direct authority of our Constitution for the purpose of "promoting the progress of Science and Useful Arts." One has only to compare the standard of living of the United States with that of other countries to realize that the patent system has succeeded in its purpose.

The arts and sciences grow and develop in direct ratio to the dissemination of information. It stands to reason that the greater the number of knowledgeable people, the greater will be the total mass output of new ideas. So the patent system was devised to encourage the disclosure of new ideas by granting a reward—the limited monopoly of the patent.

Before undertaking research reading of relevant patents is a must.

Primarily the word "patent" means "open to public perusal," hence, open for all to see. So the document issued to an inventor is actually "Letters Patent," i.e., letters open to all and sundry, but it is commonly referred to as a patent for convenience. The term means what it says, for it is the inherent function of a patent to record, disclose and preserve the accomplishments of the past for the benefit of the future, to add to the sum total of human knowledge.

Necessity to Instruct

To earn his reward the inventor must divulge enough information in his patent specification to instruct anyone skilled in the pertinent art how to practice the invention. He must also mark the limits of his invention by appropriate claims, so that the same skilled person will know what he may not use of the invention for monetary gain. But the information contained in the patent can be freely used by all, and from the ashes a new Phoenix may arise.

The following question is sometimes asked: "Why must the inventor disclose in so much detail that which no one may infringe?" The reason is, of course, that the invention is dedicated to the public after 17 years and would be of little value were it not informative. Secondarily, and this is implied rather than stated in the patent law, the one who obtains the monopoly must reveal sufficient facts to enable others to devise improved methods without having to cover the same ground. This stimulates additional invention. Then, too, the thing invented must be adequately described to make fully clear to what extent it constitutes prior art.

The why of reading patents is equally the why of reading scientific articles. The answer is: to acquire knowledge. A corollary answer is: to avoid infringement. As both are important no one engaged in research can

Invention can occur if someone thinks of the solution to a problem.

afford not to read patents relating to the field of his endeavor. It cannot be said that patents fall into the category of entertainment, for they constitute about as difficult reading matter as there is. But there is no more pertinent or important scientific literature in existence.

Reading Before Research a Must

Before a research project is undertaken the reading of relevant patents is a must. It is futile to devote time and effort to things already done or interdicted. At the same time patents point the way to new fields and indicate the trend of industrial activity. If patents circumscribe research activity they also broaden its scope by suggesting other lines of inquiry. They also reveal what subject matter is of interest to others and there is no gainsaying the effect of crowd appeal. Where there is a leader, there are always followers.

It is equally important that the managers of business should know of existing patent art. Industrial trends are largely revealed by patents. On the principle of "where there's smoke, there's fire," patents disclose the existence and nature of competition. Also the cost of infringement is great so it behooves management to inform itself as to dominating patents of others. And it is equally the responsibility of the agents of management, that is, the research scientists, operators, attorneys, salesmen and the like, to know what patents exist and how to interpret them.

Although upon first approach a patent may appear somewhat formidable, it can quickly be cut down to size by attacking the key areas. By following a few simple rules the wheat can easily be separated from the chaff, so that serious reading can be limited to the patents of special interest.

When a drawing is included, the reading problem is greatly simplified, as much of the invention will be self-evident. However, some reading of the text will be required to ascertain what has been invented. Look first, then, at the opening paragraph which states generally to what the invention relates. Titles are too broad to be of any help in this regard. Then go to the first claim for the specific statement of invention. If the patent is relevant to your inquiry, return to the second paragraph or so of the specification and read through the discussion of the prior art and problems thereof to be solved, the objects of the invention and the general statement of invention.

For a complete working knowledge of the patented invention, it will, of course, be necessary to read the entire patent and to study the detailed description of process steps and of the drawings, when included. In chemical composition cases the examples will be particularly rewarding, and even one such example may supply sufficient information to the chemist for complete comprehension of the invention.

In most patents there will be a shotgun inclusion of probable equivalents of the elements specifically mentioned. If the patent relates closely to the subject of study, these equivalents should not be ignored. It may later be discovered that some of them are in fact not equivalent at all. Or, perhaps, the inventor has omitted some other equivalents to leave open a path to new invention by others. The possibilities are endless.

Finally, the principal claims should be studied to establish just what was inventive. If, for example, a very broad statement of invention is followed by very narrow and limited claims, it is a clear indication that much of what was done was already in the public domain. Conversely, broad claims indicate that the subject matter of the invention is in its infancy.

As a source of additional information the references cited against a patent may be most valuable. Since 1947 the list of references has been printed at the end of the patent and has always been of public record obtainable by examining the file in Washington. It must be remembered, however, that the references are cited only against claims and, for that matter, patents are classified only according to their claims, so the references will not necessarily relate to all that is disclosed in the patent specification. But notwithstanding, the references should be examined when a patent proves to be of sufficient interest.

Appraising Patents as Prior Art

Patents must be even more carefully studied when the object is to appraise them as prior art. After all the patentability of every new development is judged by the extent and degree to which it has departed from what has gone before. Whether that new development is really invention depends upon what is implied as well as expressed in earlier patents. So the patent appraisal must be looked at from the point of view of what it would be likely to teach the man skilled in the art. There is, of course, a good bit of second guessing, or Monday morning quarterbacking, about this. But even so, if an existing patent can reasonably be considered to show the way to later invention, then it precludes patentability of that later invention.

In practice the problem of appraisal is not so simple as indicated above, since almost never will a single directly anticipatory patent be found if the inventor has

Test Your Patent I.Q.

1. If in the patent a broad statement of invention is followed by narrow claims, it is indicative that
   (a) the patent concerns a new field.
   (b) the inventor has done all possible to protect his invention fully.
   (c) the patent covers material much of which was already in public domain.
   (d) the patent is easily subject to attack.

2. References cited against a patent
   (a) are printed at the end of the patent.
   (b) are confidential data not accessible to the public.
   (c) can be obtained from the Patent Office.
   (d) can be reconstructed by patient study of the application papers.

3. Invention is
   (a) the construction of a functionable physical object.
   (b) the development of an idea through research.
   (c) the idea, and that is all.
   (d) the idea, provided it was originated by only one person.

4. When a Patent Office examiner combines references, he
   (a) prepares a bibliography of patents related to the patent application.
   (b) chooses elements from several patents and makes a theoretical combination of them.
   (c) lists various authorities to prove that invention already exists.
   (d) evaluates the various arguments of the patent attorney.

5. No valid patent can issue when the invention was on sale or used publicly
   (a) before the application was filed.
   (b) if the application was not filed within one year.
   (c) if the application was not filed within five years.
   (d) and has been copied by manufacturers other than the inventor.

6. Copyrights are obtainable by
   (a) applying to the Library of Congress.
   (b) applying to a branch of the Patent Office.
   (c) publication with notice of copyright.
   (d) having a publishing house present the manuscript for evaluation to the Library of Congress.

Check your score on page 813.

made an adequate literature survey before reaching invention. The Patent Office examiners have developed to a fine art the nasty procedure of combining references, that is, choosing elements from several different patents and making a theoretical combination of them. If elements A and C from one patent and elements B and D from another, for example, can be combined in the manner and with the result of an invention, then that invention is not patentable. So in appraising patents one must always bear in mind that any given patent may be dissected at the examiner's discretion. Hence its separate elements must be individually scrutinized and visualized in combination with elements of other patents.

The appraisal of patents in combination with others is a highly individual matter. Results will differ as between persons. Consequently, one need not necessarily be discouraged by the results of his imaginings since the chances that an examiner, or a patent solicitor, or even a fellow worker will reach the same conclusion are by no means certain.

Such appraisal may even lead to invention, since novel combinations of old elements are clearly patentable. But one must be realistic and there will be times when an invented combination is clearly obvious from a consideration of pertinent prior art. However, if there is the slightest doubt, it should be resolved in favor of patentability so that it may be tested in the Patent Office.

The claims define the invention. They mark out the boundaries of the inventor's monopoly. Almost never are they as broad as the optimistic statement of invention in the specification. But the claims must be read and interpreted in light of the disclosure, which sometimes results in broadening or narrowing their scope beyond what the literal interpretation of the words used might indicate. So, too, the meaning of certain words used in the claims may be only that fixed by appropriate definition in the specification. Just remember that the claims are summaries of the invention described in the specification and that the specification is their glossary.

It really is not difficult to understand claims and their function with a little mental effort and a knowledge of the rules. Here are the principal ones:

Invention is incorporeal and the stuff of which dreams are made.

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Public use of an invention starts time running against the inventor.

(1) A claim can be only a single sentence, i.e., have but one period. Semi-colons and colons may be and are used, and of course commas appear in great profusion. It is the single sentence requirement that makes for involved grammatical structure but precise definition.

(2) All of the elements or features set forth in the claim must be duplicated actually or in effect to be infringed. The omission of any one element without replacement by an equivalent will avoid infringement. But addition of elements or features does not avoid the claim if the whole includes all of the claimed parts.

(3) The longer and more complex a claim and the more elements or features it has, the narrower it usually is. The claim couched in generalities is more deadly than that which is specific, for the generalities always embrace greater territory.

(4) To claim more than a single specie of invention, there must be an allowable generic claim, and then only five species can be claimed in one patent. It is because of the desire to include all possible preferred species that so many claims which appear to be essentially duplicates of others are used. Regardless of appearances all claims are distinct from one another.

(5) It is customary to include a number of claims of varying scope, so that if the broad claims are later invalidated, the inventor can retreat to the narrow claims and preserve his patent.

(6) The first of the series of claims is usually the broadest, but not always. When appraising claims for extent of coverage, read all of them. The broadest or generic claims may be tucked into the middle of the list.

Joint and Sole Inventions

Confusion frequently exists as to who is the actual inventor. It would seem a simple matter to identify the inventor in any given case but surprisingly, particularly when joint invention is involved, it is not.

Invention is the result of the working of the mind and hence is an idea. It is not the physical doing of anything although it may be the discovery resulting from such doing. But recognition of a discovery, as well as the springing into being of a new idea, is a mental function. So the first step toward identification of the true inventor is to ascertain who first had the idea which is the core of the invention.

There are so many different ways in which invention can be made that no universal rule for determining inventorship can be given. But the following examples illustrate the more common methods of inventing. The assumed problem is to improve the operation of a piece of machinery, for example, to eliminate excessive gear wear, or to better a process, such as to increase the carbon black yield. Invention might come about in any of the following ways:

(1) The individual concerned with the problem thinks about it and the solution occurs to him. He is the inventor.

(2) Several individuals sit down together to talk it over. Each states his ideas and out of the discussion comes the solution. Everyone who made any suggestion leading directly to the solution is a co-inventor with the others, so all contributors to the ultimate idea are joint inventors.

(3) No one deliberately sets out to do anything about the problem. However, the machine or process operator manipulating the apparatus parts or process controls from time to time discovers that things have changed and that rate of gear wear is drastically reduced or black yield has significantly increased. He then checks back to find out what he did to effect these changes. His discovery of the new element responsible for the improved results is invention.

(4) The problem is solved piecemeal by several individuals acting independently. That is, A changes the lubrication system, B the location of bearings and C the shape of the gear teeth, all of which are essential to the solution of the problem. This rearrangement of parts may collectively be invention but there is no joint invention since there was no joint effort, so no patent application can be filed. However, if A, B and C had collaborated and each had contributed to the complete change, then there is joint invention.

(5) One individual makes a number of suggestions for change of machine parts or process steps. Another individual carries out these changes as suggested. The latter discovers that one of the suggested changes solves the problem. The suggestor is the sole inventor. The person actually making the changes and doing the work did not contribute any original mental assistance, so is not an inventor.

Invention is the product of thought—the idea—and that is all. That a great deal of work and expense becomes involved in proving the invention and making it operate successfully does not alter that fact. An invention is no more patentable after thousands of research dollars have been spent than at the moment of its birth, although those research dollars must usually be spent to prove to the inventor, and often to the Patent Office, that invention really exists. Then, too, invention may not be discovered until many of those dollars have gone down the drain. But it is important to remember that invention itself is incorporeal and of the stuff of which dreams are made.

Public Use and Publication

The use in public of an invention, including sale of an inventive composition or product, starts time running against the inventor. The patent application thereon must be on file within one year from the first public use or sale, or no valid patent on the invention can ever issue. If the Patent Office learns that there has been public use for more than one year, the application will be rejected on that ground. If the patent issues notwithstanding public use—and this occurs in most cases since there is no effective machinery which the Patent Office can employ to determine if an invention was used in public at any time over a year prior to issuance—then the patent will always be subject to subsequent invalidation on that ground. Therefore, it is essential that all inventors remember this: If the invention goes into commercial operation or on sale, a patent application must be on file before a year has elapsed.

It is questionable whether commercial practice of an invention in a plant from which the public is excluded is public use in the strict sense. However, if no deliberate attempt is made to keep the invention secret, then commercial use may be public use under the patent laws. On the other hand, if the invention is carried out for experimentation, even publicly using commercial equipment, and even if the product is sold, then that is not usually public use. But the whole subject of public use is tricky, and the only safe course to follow in all cases is to file a patent application as soon as possible.

Publishing a description of an invention more than a year prior to the date of filing the application is also a complete bar to issuance of a valid patent. Since scientific articles and treaties are also filed and indexed in the Patent Office, they are readily available to the examiners. Such articles are fully as effective as references against an application as are patents. Even advertising and trade literature is publication under the patent laws and can prevent valid patenting. Consequently, the inventor who likes to rush into print with his discoveries must make sure that his application is on file within the year following publication of his article.

Trade-Marks and Copyrights

A trade-mark is a distinctive word, letter, design or symbol placed upon merchandise or used in connection with a particular service. Its purpose is to identify the merchandise or service with a particular person or organization, to point directly to origin or ownership. The extent to which trade-marks are used is only too evident to anyone who listens to the radio or looks at newspapers, magazines and television. Obviously trade-marks are extremely valuable to any business enterprise and in some circumstances may even be more valuable than patents, particularly as the life of a trade-mark can be perpetual while that of a patent is only 17 years.

Distinctive marks to identify manufactured articles have been used throughout the centuries, far longer than patents. Further, they are quite unlike patents except that the right to use them when properly protected is exclusive with their owners. But protection of a trade-mark is not secured by government grant as for a patent. The right to a trade-mark is obtained by applying the mark to goods or services sold.

Answers to Patent I.Q. Test

1. (c) the patent covers material much of which was already in public domain.
2. (a) printed at the end of the patent.
3. (c) the idea, and that is all.
4. (b) chooses elements from several patents and makes a theoretical combination of them.
5. (b) if the application was not filed within one year.
6. (c) publication with notice of copyright.

It is customary to register the mark with the Patent Office when possible in order to secure adequate protection of the exclusive right, but registration only establishes a public record as to the ownership of the mark and as to the goods or classes of goods to which the mark applies. Patent Office registration grants no rights not already belonging to the owner of the mark whereas a patent is a grant of limited monopoly not previously existing. In either case, however, the owner has the right to exclude others from using what is protected. As a pungent, graphic means of identifying a company and its products, the trade-mark is an invaluable item of property.

A copyright is analogous to both a trade-mark and a patent in that it is the right to prevent others from copying one's creation. This right is of two kinds, to prevent others from copying unpublished works (common-law copyright) and to prevent the copying of published works (statutory copyright). In the case of unpublished works no action must be taken by the author to obtain his copyright; it is an automatic right existing by virtue of the common law. However, to obtain an enforceable copyright on a published work the owner must mark his work with an appropriate statement or symbol of copyright and register the work with the Copyright Office of the Library of Congress.

The most common applications of copyright are thought to be books and drawings. However, it is also applicable to musical composition, maps, statues, reproductions, photographs, motion pictures, etc. None of these need be of literary or artistic merit nor must the subject matter be new, so long as it is independent, intellectual creation. In fact, the work may be identical with another and still be copyrightable if it was independently created and not copied from the other.

The copyright is obtained by publication with notice of copyright and is automatic at that point. To be enforceable, however, it must be registered with the Copyright Office of the Library of Congress. Upon registration the copyright is good for 28 years and may be renewed for an additional 28-year period.

Patents, trade-marks and copyrights are all forms of industrial property each of which has great value in its own sphere. Taken together and over the years they represent an accumulated value of billions of dollars, for there is hardly an industry in existence which has not had occasion to rely to a great extent on one or several of these items of property.

Natural and Synthetic Latex

Four technical papers presented at the June meeting of the Southern Rubber Group covered current developments in the fields of natural and synthetic latices

FEATURED at the meeting of the Southern Rubber Group in Atlanta, Georgia, on June 7 and 8, was a panel discussion of four aspects of latex. J. L. Fesperman, Catherine Rug Mills, Dalton, Georgia, served as moderator of the panel. The subjects and speakers were: *Natural Latex*, E. M. Glymph, Firestone Tire & Rubber Co., Akron, Ohio; *Butadiene-Styrene Latex*, J. P. McKenzie, Copolymer Rubber & Chemical Corp., Baton Rouge, Louisiana; *Latex Compounding*, R. R. Waterman, R. T. Vanderbilt Co., Inc., New York, N. Y.; *Use of Latex in Textiles, Fibers and Paper*, E. Leonard Borg, Naugatuck Chemical Division, U. S. Rubber Co., Naugatuck, Conn. The papers presented by the panelists are reproduced in full herewith.

Natural Rubber Latex

By E. M. GLYMPH

Firestone Tire & Rubber Co., Akron, Ohio

IN SPITE of the rapidly growing synthetic latex industry the future outlook for natural rubber latex is bright. The area under plantation rubber is steadily increasing each year and amounts to a world total at the present time of over 11,000,000 acres *(1)*. From the producing portion of this acreage a crop of 1,872,500 long tons of dry rubber was harvested in 1956 and of this total crop 152,250 long tons, or slightly more than 8%, were exported as natural rubber latex.

The Hevea latex consumption figure for the United States in 1956 was 73,100 long tons, or about 13% of the total natural rubber used. Butadiene-styrene synthetic latex consumption for this same period was 65,380 long tons. A comparison of these with similar figures of five years ago reveals a tremendous growth in both latex industries.

Why has the Hevea latex industry maintained such a healthy position in the face of mounting competition from synthetics? Some of the answers to this question will be mentioned briefly here.

Advances in Production

First, significant improvements have been made in yields and production techniques. Earlier plantations were made up entirely of unselected seedling trees which yield only about 400 pounds of dry rubber per acre. However, through years of patient research in selection and plant breeding, high yielding clones have been developed which produce 1,500 pounds per acre and more. Some clones yield at the rate of 2,500 to 3,000 pounds per acre, but such yields are not typical of any large plantings at the present time.

A clone is the progeny of a single selected high yielding mother tree which has been propogated by grafting buds from the mother tree on to young seedling stocks. Thus, all the trees of a given clone have the same hereditary traits such as growth characteristics, wind resistance, disease resistance, and quality of latex and rubber. There is often a wide variation in these characteristics among the various clones. Unfortunately, the highest yielding varieties do not always produce the highest quality latex.

Another means of improving yields is by planting seedling trees derived from the crossing of selected parents. Such seedling families often yield as high as the best clones and at the same time eliminate the operation of grafting.

The importance of these improved yielding trees can be more vividly emphasized by showing that about 2,000 unselected seedling trees would have to be tapped to produce enough latex for a double bed foam rubber mattress, whereas only about 500 of the high-yielding clonal type would be required at present, and possibly in the future the number might be as few as 300 trees.

Old seedling areas are being slaughter-tapped and replanted with high yielding clonal rubber on the more progressive plantations today.

For several years now in the rubber producing areas, research has been conducted on yield stimulation by the injection or application of chemicals, particularly certain hormones. The most effective and widely used of these materials are 2,4-dichlorophenoxyacetic acid (2,4-D), 2,4,5-trichlorophenoxyacetic acid (2,4,5-T), and $CuSO_4$ *(2)*. These substances produce only a temporary increase in yield, and treatment must be given every three to four months. Increases of from 20 to 40% in yield over a prolonged period have been recorded on experimental areas. Much higher increases have been observed for short periods.

It is suggested that these stimulants function through increasing the effective area of bark drained by the tapping cut. The long range effects of the stimulants on the tree have not been fully evaluated, but no harmful effects on latex quality have been observed. These yield stimulants are being used commercially today on seedling trees which are being slaughter-tapped prior to replanting.

Latex as it flows from the rubber tree generally has a rubber solids content of 30 to 45%, the amount varying with age and type of rubber as well as with season. This field latex must be concentrated before shipment to the consuming countries. This is most commonly done by centrifuging in large machines which separate the latex into a cream fraction which is the standard latex of commerce and a skim fraction of about 10% total solids content.

Since the concentrate is a premium product, it is obviously of economic importance to attain a high separating efficiency. Centrifuges have been developed to achieve this. The skim latex is normally coagulated and sold as an off-grade crepe. However, Firestone *(3)* has developed a process of spontaneously coagulating and chemically treating the skim fraction, which upgrades it to a rubber equivalent in physical properties and in price to No. 3 ribbed smoke sheet.

Another important method of concentrating latex is by creaming. In carrying out this method, a small amount of a creaming agent such as ammonium alginate is added to the field latex in addition to enough ammonia for long term storage (about 1.75% on the aqueous phase). In many instances a small amount of an ammonium soap is also added as a stabilizer. The latex is then allowed to stand for about three weeks, after which time a skim layer containing only a negligible amount of rubber is drained off.

In recent years, concentrates of very high solids content, 66 to 68%, have been made by this method. The higher solids prevent the tendency to after-cream and slightly reduce shipping costs. In addition, they may be an advantage in some latex applications. Electrodecantation and evaporation are other means of concentration which are used commercially to a limited extent.

Latex used to be shipped from the plantations in drums; today it is handled almost entirely as a bulk operation in shipments of around 200,000 gallons each. The large bulk shipments not only reduce costs but yield more uniform quality latex.

A Panel Discussion on Latex

Improvements in Quality

The second important factor which has contributed greatly to progress in the natural latex industry has been the continuing research program of the producers aimed at constantly improving the quality of the product.

Any "old timer" in the industry familiar with the bad odor, poor color and low stability of the earlier article of commerce need not be reminded of the progress which has been made in improving the quality and uniformity of latex.

One of the most important of these contributions has been the recognition of the need for sanitary handling of the latex on the plantations. Latex is a perishable commodity and will spoil in a matter of only a few hours as a result of bacterial and enzymic action unless a suitable preservative is added. Bacterial counts of 600 to 700 million per cc. have been observed in field latex which was held for only about eight hours without a preservative.

Ammonia as a Preservative

Ammonia is the oldest and most commonly used preservative; but, as will be mentioned again later, others in conjunction with low concentrations of ammonia are gaining in importance. The tapper adds a little ammonia to the latex cup at the time the tree is tapped. This small amount retards but does not completely arrest bacterial growth. For this reason, time is an important element, and the latex is collected and brought to a local receiving station as soon as possible, but not so early as to produce an excess of off-grade "cup lump" which results from dripping after collection. An additional amount of ammonia is added at the collecting station, bringing the total to about 0.3% on the latex. This amount of ammonia substantially arrests bacterial action for periods up to one day, but in this stage of preservation speed in handling is still extremely important.

Some producers find the addition of small amounts of formaldehyde to the ammoniated field latex effective in retarding bacterial action, particularly if there is to be much delay before concentration of the latex.

Following field ammoniation the latex is brought to the processing plant and concentrated without delay. If concentration is by centrifuging, a low ammonia cream (0.1 to 0.15% NH_3) is obtained. This is immediately adjusted to the final level for preservation (1.75% on the aqueous phase).

If concentration is to be done by creaming, this adjustment is made before the standing period. The bacteria in latex concentrate containing 1.75% ammonia on the aqueous phase are highly attenuated and any further degradation due to their presence at this stage is extremely limited. There are occasional reports of harm due to "ammonia resistant" bacteria, but no trouble is experienced with this type if adequate preservative measures are adopted during early stages of handling.

The Volatile Fatty Acid Determination (V.F.A.), developed by Philpott and Sekar *(4)* in the Far East, has been found to be very useful for measuring the amount of bacterial degradation which has occurred in latex during field handling. For this purpose it is a better test than the KOH number, since the latter measures not only the low molecular weight volatile acids, but also the high molecular weight fatty acids which form stabilizing soaps, and amino acids which are formed for the most part by chemical hydrolysis of the proteins in the latex by the ammonio which has been used for preservation.

It has been shown that the extent of volatile fatty acid formation in latex is dependent on the time of ammoniation, the amount of ammonia added, and the period of storage prior to concentration *(5)*. These water-soluble volatile acids have a pronounced effect on the sensitivity of latex for compounding with zinc oxide.

Storing latex at elevated temperatures is recognized to be harmful. High temperature storage increases bacterial activity at low ammonia levels, and increases chemical degradation by the ammonia at all levels.

Ammonia as a preservative has some disadvantages, and there has been a continuing search for new and better preservatives. Some of these disadvantages are:

(1) It must be at least partially removed by the consumer in many processes, such, for example, as the manufacture of foam rubber.

(2) The strong ammonia fumes due to its volatility are objectionable in many other latex processes.

(3) Heavy cylinders must be shipped to and from the plantation for its transport.

(4) Because of the rather high alkalinity which it imparts to the latex, chemical hydrolysis takes place, resulting in a slow degradation of quality, as was mentioned earlier.

About nine years ago, Firestone pioneered in the large scale production of a low ammonia type latex which overcomes many of the above disadvantages. The preservative system in this latex is made up of a combination of materials among which are included 0.1 to 0.15% NH_3 and a small amount of sodium pentachlorophenate. Rhodes *(6)* in the Far East had shown at an earlier date that sodium pentachlorophenate when used in the presence of low ammonia makes an excellent preservative for latex.

The demand for this low ammonia type latex, particularly by foam manufacturers, has steadily increased. Several foam plants would be handicapped without it because of insufficient tank capacity for de-ammoniation with regular ammoniated latex. The less objectionable ammonia odor also makes this latex desirable in coating and adhesives applications.

Other producers are now marketing low ammonia latices. A recent patent *(7)* has been issued which describes the use of a low concentration of zinc dimethyldithiocarbamate (0.05 to 0.25%), a surface active stabilizer such as ammonium oleate (0.2%), and a low concentration of ammonia as a latex preservative system. Another patent *(8)* discloses the preservation of latex with a small amount of tetra alkali salt of ethylenediamine tetraacetic acid and a low ammonia concentration. Still another preservative system, which is reported to show promise, consists of a combination of 0.2% boric acid, 0.05% lauric acid and 0.2% ammonia *(9)*.

In addition to the previously mentioned advantages, many of these low ammonia latices also exhibit unusually good storage stability, are less sensitive to temperature of storage and are less reactive towards zinc oxide. In processes where the latter may be a detriment to good gelation behavior, the difficulty can be corrected by compounding to increase the ZnO sensitivity.

The problems of control of quality of latex on the plantation do not end with adequate preservation. Other factors, such as clonal characteristics, season, and soil conditions, to name only a few, may contribute to poor properties. It has been found for example that the phosphate/magnesium ion balance in latex has a definite influence on mechanical stability. These variables are all studied and controlled, usually by large-scale blending operations, so that the present day natural rubber latex meets very rigid standards of quality and uniformity.

Desirable Properties of Natural Latex

Finally, natural latex owes its increasing commercial importance to a desirable combination of properties which has not been equalled by any of its man-made competitors. This combination includes good film forming qualities and high film strength, high elongation, high wet gel strength, good resilience, and ease of processing and cure.

Such properties make its use indispensable in many latex applications. Chief among these is latex foam rubber, which consumes an estimated 60% of the total natural latex used in the United States. Latex foam usage by products for 1955 was as follows: mattresses 12%, automotive toppers 33%, furniture and pillows 36%, all others 19%.

Some combination of natural latex and SBR-2105 synthetic latex is used in the manufacture of most of these products. The amounts of each type is dictated by price and the strength requirements for manufacture and service of the product in question. In the case of large objects, such as mattresses, where high strength is desirable to avoid tearing while stripping from the molds and handling in the wet stage, a large amount of natural latex is needed. Smaller articles, which do not present a problem in stripping or which do not have a high strength requirement for satisfactory service, may be made with higher proportions of synthetic, and in some instances all-synthetic foam rubber articles have been made commercially.

The high strength of natural latex foam also permits substantial loading with low cost fillers such as clays, alumina, silica and $CaCO_3$, resulting in lower cost products which still may be equal in strength to some of the foams of higher synthetic content. Good load deflection characteristics, high resilience, ease of processing and ease of molding are some of the other properties which make natural latex desirable in foam rubber production.

In extruded latex thread and many dipping applications, natural latex is almost the only raw material suitable because of its high wet gel strength, elongation, and dry film strength. In fact, the high strength of natural latex is an advantage in most latex products, even if high final strength is not needed because it allows the incorporation of large amounts of low cost fillers.

In summary, then, the future outlook for natural latex is promising because it has a combination of excellent properties which have not been equalled by the competitors in its field, and because, even at its present high level of performance, its quality and uniformity are continually being improved.

LITERATURE REFERENCES

(1) Meeting of the International Rubber Study Group, London, England, March, 1957.

(2) Baptist, E. D. C., and de Jonge, P., *J. Rubber Research Inst. (Malaya)*, Vol. 14, p. 353 (1955).

(3) Firestone Tire & Rubber Co., Brit. Pat. 739,750 (1955).

(4) Philpott, M. W., and Sekar, K. C., *J. Rubber Research Inst. (Malaya)*, Vol. 14, p. 93 (1953).

(5) Cook, A. S., and Sekar, K. C., *J. Rubber Research Inst. (Malaya)*, Vol. 14, p. 402 (1953).

(6) Rhodes, E. J., *J. Rubber Research Inst. (Malaya)*, Vol. 8, p. 324 (1938).

(7) Townsend, H. B., U. S. Pat. 2,743,305 (1956).

(8) Rhines, E. C., U. S. Pat. 2,560,743 (1951).

(9) Anon., *Planters' Bull.*, Vol. 26, p. 93 (1956).

Butadiene-Styrene Latex

By J. P. McKENZIE

Copolymer Rubber & Chemical Corp., Baton Rouge, Louisiana

THE manufacture of synthetic latices is a comparatively young industry. Before World War II there was little demand for synthetics because of the plentiful supply of natural latex. During the early years of the war the demand for dry rubber was so great that very little attention was given to their production. As the supply of dry polymer became more plentiful, however, more attention was given to production and use of latex. The first latices produced were made at high temperature, and found uses in making tire cord dips and to some extent in the preparation of fabric backing compounds. As facilities for production became more available, other uses were found in making such products as rug backing compounds and adhesives.

A study was also made of production methods for making high solids latex. During the early development this was accomplished by emulsion polymerization at high temperatures to very high conversions. This was done with low water charges, and latices of 58 to 60% solids were obtained. These latices were used for making foam sponge and also for textile coating applications.

The real impetus to large scale production of synthetic latices came with the introduction of the process for making cold rubber. The low temperature process was found to produce latex which would give films or foam with much higher strength than could be obtained with the high temperature polymerization process. In the low temperature process the initial charge contains small quantities of soap and water. This enables one to get larger particle size latex. As the reaction progresses, soap increments are added to maintain latex stability. The reaction is shortstopped at 60% conversion and the excess monomers are stripped off. Sufficient water is then removed in a concentrator to produce a latex of 60 to 63% solids.

There are two principal producers of hot polymerized latices—Firestone Tire & Rubber Co. and Naugatuck Chemical Division of United States Rubber Co. The latices and their principal uses are shown in Table I. Cold polymerized latex is available from a number of

TABLE I—HOT POLYMERIZED LATICES

Number	Producer	Soap Type Emulsifier	Styrene Content	Mooney Viscosity	% Solids	Principal Uses
2000	F* and N*	Rosin	46	75	41	Textile sizing, rug backing, cord dip, paper saturation, beater addition
2001	F and N	Rosin	46	30–35	38	Developed especially for paper saturation
2002	F and N	Rosin	46	65–70	49	Textile sizing and rug backing
2003	F	Rosin	29	125	60	Foam applications
2004	F	Rosin	0	——	58	Continuous foam
2006	F and N	Fatty acid	23	50–55	27	Manufacture of chewing gum base
2005	N	Rosin	45–50	55	60	Rug backing

* F signifies Firestone Tire & Rubber Co., and N signifies Naugatuck Chemical Division of United States Rubber Co.

companies. The types available and their producers are shown in Table II.

Problems in Production of High Solids Latex

The production of high solids latex involves certain difficulties, chief of which are the following:

(a) The production of high solids latex requires much more control work than the production of dry polymers. In order to produce latices with large particle size (low viscosity), the operation must be carried out at a soap concentration which is on the border line between a stable system and a system containing considerable prefloc; therefore, there is always a danger of a substantial percentage loss due to prefloc formation.

(b) High solids latex reactions tend to die at low conversions. It is difficult to revive such reactions and frequently abnormally large quantities of unreacted monomers have to be recovered.

(c) Items (a) and (b) lead to low production efficiency and high production cost. Much effort is being expended to raise this efficiency and thereby lower costs.

A number of companies are producing latex with approximately 65% bound styrene and 35% bound butadiene in the polymer. Very small proportions of synthetic emulsifiers are used in the preparation of these latices. Therefore, it is possible to produce latices with large particle size and very low viscosity at 50% solids. Most of these latices are used in the production of so-called rubber base paints. The companies producing these latices are Dow Corning, Goodyear, General Tire, Koppers and Firestone.

Other uses for these butadiene-styrene resin emulsions are paper and textile coating, fiber board coatings, wood sealers and adhesives. The consumption of latex in the paint industry in 1955 was about 2,000,000 pounds.

Recently, Goodrich-Gulf has announced the production of Latex 4850. This latex is made by a different process than that used for the other cold latices. It is made by a method which requires only 10 to 20 hours reaction time instead of the usual 40 to 50 hours needed to produce 2102 and 2105 types of latex. This produces a latex of small particle size. Therefore, some method of increasing the particle size must be applied before it can be concentrated to 60% solids.

As early as 1945 mention was made of agglomeration of latex particles by freezing in the reports to Rubber Reserve by Maron and co-workers at Case Institute of Technology. An Italian patent was issued to Leon Talalay of Goodrich on June 10, 1955 covering such a freeze agglomeration process. A similar application was filed in the United States on November 20, 1953.

According to this patent, freezing under controlled conditions will accomplish agglomeration of particles (without coagulation) sufficient to allow concentration of the resulting latex to above 60% solids and still maintain fluidity. This process appears to have several advantages over regular methods of making high solids latex. They are as follows:

(1) Considerable reduction in capital cost of equipment to produce high solids latex is made because of the much shorter residence in the reactors.

(2) Better control of the particle size of the latex is maintained, which enables the production of latex of more uniform viscosity.

(3) The efficiency of this process should be considerably higher than that of the conventional methods of making cold high solids latex.

(4) It should be possible in the future to produce fluid latices with solids content of 65% or better.

The total production of synthetic latex in the United States for 1955 was approximately 64,000 long tons, or 143,000,000 pounds dry weight. Assuming the same percentage increase in usage for 1957 over 1955 that was experienced in 1955 over 1953, the usage this year should approximate 87,000 long tons, or 195,000,000 pounds dry weight. Thus, it is seen that the synthetic latex industry is getting to be a big business.

TABLE II—COLD POLYMERIZED LATICES

Number	Producer	Soap Type Emulsifier	Styrene Content	Mooney Viscosity	% Solids	Principal Uses
2101	C,* N,* G*	Fatty acid	25	150	24.0	Cord dip, paper saturation
2102	C	Fatty acid	14	150	60.0	Foam rubber
2104	G	Fatty acid	0	——	60.0	Foam
2105	C, N, G, S*, F*	Mixed soap	25	140	60.0	Rug backing, pile fabrics, foam
X-765	C & G	Fatty acid	25	150	40.0	Same as 2101 except 40% solids
2111	C	Rosin	23.5	50	20.0	Used for lignin masterbatches and asphalt reinforcing
2112	C	Rosin	23.5	50	40.0	Used for lignin masterbatches
X-800L	C	Fatty acid	38.5	145	39.5	Rug backing, tire cord dips

* C signifies Copolymer Rubber & Chemical Corp.; N, Naugatuck Chemical Division of United States Rubber Co.; G, Goodyear Tire & Rubber Co.; S, Shell Chemical Corp., and F, Firestone Tire & Rubber Co.

Latex Compounding

By R. R. WATERMAN
R. T. Vanderbilt Co., Inc., New York, N. Y.

THE equipment used for mixing latex compounds is less expensive and less power consuming than rubber mills or Banbury mixers. Latex batch sizes vary from a drum to several thousand gallons. No heat is built up during the mixing, and the polymer is not degraded.

The choice of stabilizer is of primary importance. Prefloc or incipient coagulation is evidence of improper or insufficient stabilizer. Stabilizers are chosen to allow the desired:

(1) Foaming or lack of foaming during processing.
(2) Wetting of fibers.
(3) Mechanical stability.
(4) Chemical stability.
(5) Water resistance of cured film.

Perhaps we should expand the five points listed above to show the need for proper stabilizers. Soaps are widely used as stabilizers if frothing is desirable, as in the case of foam compounds. Rug backing or upholstery backing compounds may require non-frothing stabilizers, depending upon the processing equipment. Casein solubilized with caustic is widely used in coating compounds.

Wetting and Penetration of the Fiber

Ease of wetting and degree of penetration of the fiber bundle depend upon the following:

(1) Wetting properties of the stabilizer.
(2) Flow characteristics of the compound—viscosity and thixotropy.
(3) Strainability of compound as evidenced by strike-through—influenced by the type of thickener.
(4) Chemical stability.
(5) Particle size.
(6) Design of applicator.

Insufficient mechanical stability causes machine shutdown on inferior goods. Improper machine design can impose an unnecessary burden on the latex compounder. The importance of chemical stability varies with the process. Coating compounds that are designed to be dried are not as critical as dip or foam compounds. The use of stabilizers which volatilize or break down in the cure tends to improve the water resistance of the cured film.

The vulcanizing ingredients most commonly used are sulfur, zinc oxide, and accelerator. Latex accelerators are normally of the ultra class. Precure, which corresponds to bin scorch, occurs to a marked extent in natural and SBR 2105 and to a lesser extent in other latices. Excessive precure causes mud cracks in coatings and defective crotches in dipped gloves.

The degree of precure can be controlled by the following: (1) Limiting the amount of zinc oxide (0.25 to 0.50 phr); (2) Limiting the amount of sulfur (0.30 to 0.40 phr); (3) Storage temperature (45° to 55° F.); (4) Choice of accelerator.

Latex accelerators fall into the following classes: thiazoles, thiurams, dithiocarbamates, and activated dithiocarbamates. Combinations of thiazoles and dithiocarbamates or activated dithiocarbamates are widely used. For example:

	Foam	Upholstery Coating
Zinc mercaptobenzothiazole	1	2
Zinc diethyldithiocarbamate	1	0
Activated dithiocarbamate	0 to .5	0.15 to .50

The cures are flat and the vulcanizates age very well.

The thiurams are used to produce high modulus compounds. They are also used in sulfurless compounds for high heat resistance. The dithiocarbamates and activated dithiocarbamates are the most widely used because of versatility. Precure rates vary from very fast to slow.

Protective materials or antioxidants are very important in latex. Because of light colors, the non-discoloring phenolic types are finding wide acceptance.

Fillers used are clays, talcs, whiting, silica, hydrated alumina, carbon black, or other water-insoluble materials. Rug backing compounds may contain large amounts of filler because high tensile strength is not required. The SBR latex coatings with clay or a mixture of clay and whiting exhibit excellent flex life. A mildly abrasive surface may be had by incorporating ground silica.

Softeners are oils, ester-type plasticizers or proprietary vulcanized oil emulsions. Tackifiers — rosin, modified rosins and synthetic resins—are used to some extent. Deodorants are blends of essential oils used to mask undesirable odors.

Viscosity adjusters are natural or synthetic gums used to impart the desired application properties, such as penetration, strike-through, and flow. Latex compounds are non-Newtonian in their flow characteristics.

Characteristics of an Ideal Thickener

A specification for the ultimate in thickeners might be as follows:

Physical Form: The thickener should be a water-thin material which can be added to latex without any change in viscosity occurring during the mixing operation. After a time lag of 8 to 24 hours, during which time the air incorporated during mixing has escaped, thickening occurs. The viscosity increases to a constant value. This value should not be affected by minor changes in pH nor should it vary during a storage life of 6 to 8 months.

Compatibility: At normal latex temperatures, the thickener should be compatible in all proportions with all types of natural and synthetic latex regardless of stabilization of polymer and of additional stabilization needed for compounding.

Hydrolysis: The undiluted thickener should not hydrolyze on storage. The thickened latex compound

should not exhibit a viscosity decrease during storage because of thickener breakdown.

Flow Characteristics: A mechanically stable thickener is desired which will produce the same flow characteristics with various mixing techniques (time, intensity, and so forth).

Creaming: The thickener should not cause the latex compound to cream except in a very narrow range of concentration.

Color: The thickener should not cause darkening of the finished product when exposed to heat or light. It would be desirable if the thickener would inhibit yellowing under these conditions.

Preparation of the Ingredients

Before a latex compound can be mixed, the ingredients must be prepared in a form compatible with the latex. Ingredients which function in the water phase are generally water soluble. Stabilizers and certain thickeners are examples. Ingredients which function in the cured film are generally water insoluble. In fact, latex grade compounding materials contain very low water solubles.

Surface active agents are used to aid in dispersing and emulsifying. Surface active agents or surfactants are those materials which when used in small amounts aid and assist in making stable emulsions and dispersions. Surfactants are classified as anionic, nonionic, and cationic. In each class we have materials which function as emulsifiers, wetting or dispersing agents. The number of surfactants available is increasing at a rapid rate.

Equipment for Preparing Ingredients

The equipment used for preparing compounding ingredients may be classified as follows: For dispersing solids, attritor, pebble mill, colloid mill and high shear mixer; for emulsifying liquids, high shear mixer, homogenizer and colloid mill; for making solutions, agitator (propeller mixer). The materials of which the equipment is constructed should be non-corrosive, and the machines easily dismantled for cleaning.

Only high quality dispersions and emulsions will produce high quality compounds. The order of ingredient addition in latex compounding is fully as important as the ingredients. When a compound contains a blend of two or more types of latex, some laboratory trials may be needed to determine the best order of ingredient addition.

The normal order of addition is as follows: (1) Latex; (2) Stabilizers and pH adjusters; (3) Vulcanizing materials; (4) Fillers; (5) Thickeners. In most cases, a short intensive mixing period is preferable to slow paddle stirring.

In conclusion, I would like to list the qualifications of a latex compounder. A latex compounder should have the following: (1) A smattering of bacteriology; (2) A working acquaintance with colloid chemistry; (3) A generalized knowledge of textiles, and (4) An interest in engineering. A latex compounder should also be a rubber compounder and fast on his feet.

Use of Latex in Textiles, Fibers and Paper

By E. LEONARD BORG

Naugatuck Chemical Division, United States Rubber Co., Naugatuck, Conn.

THERE are many applications of latex in fibrous materials and perhaps one hundred different latices are commercially used in these applications. The field has been separated into the two broad areas of textiles and paper. A discussion of some typical applications in both areas will illustrate the unique properties which can be achieved in a fibrous end product as a result of treatment with latex. The latices used are generally tailor-made to meet the specific requirements of the intended application. The broad range of properties desired in latex-treated fibrous end products is a continuous challenge to both the polymer chemist and the latex compounder.

Textile Applications

Fabric Adhesives: Latices are used as fabric tie coats and as doubling adhesives. The latex film usually has adequate cohesive strength, and the problem is that of developing sufficient adhesive strength at the fabric-film interface. If fiber locking at the fabric surface will suffice, a Hevea latex or low styrene-butadiene latex may be used. If additional cohesive forces between the textile fibers and the latex film are desirable, then a latex which includes functional groups in the polymer should be selected. Typical functional groups which are employed in latices are pyridine, an alkaline ring, and carboxylic groups, which are acidic.

Tire Cord Solutions: The latex solutioning of tire cord prior to building it into a carcass is really a fabric adhesive application, but is worthy of special mention. The adhesive bonds to the carcass rubber and to the textile must be stronger than the cohesive strength of the adhesive mass. For cotton cord either Hevea latex or medium styrene-butadiene latex is used. In the case of rayon cord, a mixture of medium styrene-butadiene

and butadiene-vinyl pyridine latices is generally applied. Nylon requires an adhesive with such strong functional groups that the vinyl pyridine latices are almost universally used. In most instances the tire cord solutioning bath includes a pre-formed water-soluble resin of the resorcinol-formaldehyde type in mixture with the latex.

Back Sizes: Carpets and upholstery fabrics use latex back sizes for two reasons—to anchor the pile and to improve the hand. In the cases of tufted carpet and pile fabric, the pile anchoring or tuft locking function of the back size is critically important. A latex which will accept a high loading of filler for low cost and which, at the same time, will develop the desired anchorage, is required. The low to medium styrene-butadiene latices are commonly used. The so-called "cold" latices will carry more pigment and are, therefore, favored over their "hot" counterparts. Medium acrylonitrile-butadiene latices are also used.

The desired hand is obtained by the proper selection of loading pigments, and may be varied from papery to leathery. The common pigments are whiting and the soft clays plus some titanium oxide for opacity.

The stability of the size to degradation and discoloration under the influence of light and heat is important. Generally, stabilizers and antioxidants are added to control this. Pile fabrics are dyed after back sizing so the staining and dye shade behavior of the size is important. Many of the features desired in a back size for a particular application can be included by skillful compounding.

Paper Applications

Beater Addition: In the practice of beater addition the latex is mixed with the beaten pulp either directly to the beater or to the stock chest at the wet end of the paper machine. In either case the pH of the pulp is reduced to 4.0 to 4.5, usually by the addition of a solution of alum to the pulp-latex mixture which has been thoroughly agitated. The latex, which for this application must be based on an anionic emulsifier, coagulates as the pH drops. The latex solids separate from the coagulated latex in intimate association with the pulp fibers. The pulp is then screened and the paper web is formed in the conventional way.

At low ratios of latex solids to pulp—in the order of 10 to 20 parts per hundred—latex is added to the beaten pulp to give a paper web with superior wet strength, elongation, bursting strength, internal bond and tear strength. The nitrile latices and the medium styrene-butadiene latices are commonly used as beater additives. Superior tear and elongation are obtained from the nitriles. Best results are generally obtained from a relatively small particle size latex, which as has been mentioned, can be coagulated by acidification.

Saturation: Latex solids are incorporated into a paper web either on the paper machine or off the machine. In on-machine saturation, the extracted, and sometimes partially dried web, is passed through the saturation bath as a step in the paper making. In off-machine saturation, the finished, dry web is saturated, usually by a converter.

In both on- and off-machine saturation the web is passed through a bath of the latex. The pick-up is controlled by the combination of bath strength, web speed and moisture content, and squeeze roll pressure. The pick-up usually covers the same range as for beater addition. The very heavy applications of resinous solids to paper are generally made by saturation. Again the nitrile and medium styrene-butadiene latices are used for saturation and for the same reasons as in the case of beater addition—improved tear, tensile and elongation.

At high saturation levels (50 to 100 parts per hundred) with a near thermoplastic elastomer, a leatherlike material results which can be embossed. The paper web used in pressure-sensitive tape is prepared by latex saturation in order to give it sufficient internal strength to release without delamination.

Since the latex solids in the saturation process are deposited in the structure of the paper web by drying, the colloidal system is not as critical as with beater addition. Non-ionic and amphoteric surface active materials can be effectively used in the latices. A low surface tension and small particle size are desirable characteristics.

Coating: Both functional and decorative coatings are applied to paper from latices. The aqueous dispersions can be used on conventional paper converting machinery which will usually not handle hot melts and solvent coatings. The fire hazard attendant upon the use of solvents is an added advantage for the latex system.

Latex Solids for Functional Coatings

If the coating is to be functional, the latex solids are generally film forming and are deposited on the surface of the web in a continuous film. If the function of the film is to provide oil or grease resistance, a medium to high nitrile latex, or a plasticized polyvinyl chloride or polyvinylidine chloride latex, may be used. The chlorine-containing latices will also deposit coatings with low moisture vapor transmission. Fair to good water-resistant coatings can be applied to paper from selected latices which deposit films containing low concentrations of hydrophilic materials.

The decorative coating applied to paper from latex may be a thin film of thermoplastic resin which, after application to the web, is cast against a mirror-finished heated roll. A high gloss paper stock results from this technique. The saturated vinyl and acrylic latices are used. More commonly, the latex functions as the adhesive for a highly pigmented clay coating. The pigment and latex coating color is applied, dried and calendered to give a dense, glossy, flexible coating which presents an excellent surface for subsequent graphic applications. The high butadiene-styrene latices are widely used as binders for clay coatings.

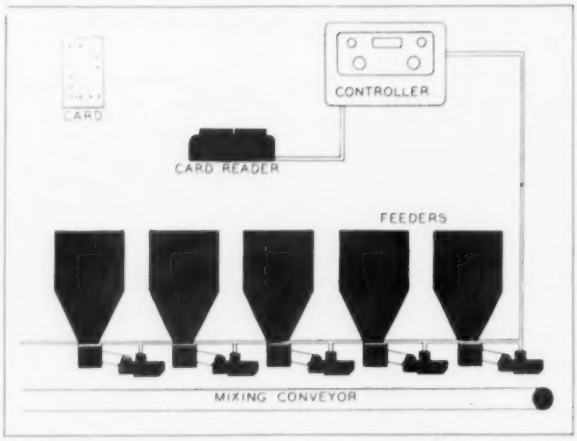
Continuous Flow Blending by Punch Card Control

A NEW low cost formula-control system for continuous flow blending of multiple components, either liquid or solid, has been announced by Graham Transmissions Inc., Menomonee Falls, Wisconsin. The new system is primarily designed to operate from a punched card, but operation may also be from a control panel containing a number of counter-type controls set to read directly in percentage of blend, pounds per hour, gallons per minute or any other convenient graduation. High accuracy formula control can be provided for continuous flow blending of rubber raw materials or many other products.

The blending system provides precision control, but is simple in operation. Only the card reader and the feeder or pump drive, with their control actuators, are needed for most applications. Although a controller is shown in the accompanying schematic diagram of one operation, it is not needed unless special control functions are called for. The system is said to provide formula accuracies of one-tenth of one per cent without the use of a single electronic component. Control simplicity is obtained through use of a binary digital system. The card reader senses binary codes, and the feeder drive operators include a built in electro-mechanical flip-flop follow-up device. The feeder or pump drive can be completely explosion proof, and the card reader or panel control can also be furnished in explosion proof enclosures.

A formula card is punched for each multi-component formula that will be run on a simple, mechanical, direct reading card punch. To punch the card, the desired percentage (or rate of feed) for the first component is set in on the punch counter. This establishes the proper arrangement of twelve punches across the card so that as many as twelve holes are punched with one operation. The card is then indexed and the desired value for the next component is set in on the counter. A formula card for 35 components may be prepared in less than two minutes.

When a desired formula is to be run, the card is inserted in the reader. The reader simultaneously sets the desired feed rates of all components and the system is ready to run. After the desired quantity of a particular formula is produced, the card is removed from the reader and stored for future use. The sketch shows a series of Graham variable speed drives connected to feeders designed to handle dry chemicals and materials. Each feeder starts in sequence as the conveyor passes so as to maintain the proper blend on the conveyor at all times.



Schematic representing the formula-control blending system. It operates primarily from punched cards, but may also be used with a control panel. Here the set-up is for handling dry materials.

If it is desired to include provisions for automatic stopping and starting of the blending system and the programmed sequence of starting each individual component, a timer and relays are added to the system. If on a volumetric system trim adjustments are needed to modify feed rates slightly to compensate for variation in component densities, a controller, as indicated in the sketch, is added.

Advantages claimed by Graham Transmissions include: (1) The system greatly reduces set-up time for plants making products which have a variety of formulae; (2) Through use of the punch card, product uniformity from one run to another is assured; (3) First cost is low, and the system may be installed and maintained by plant personnel familiar with conventional electrical and mechanical equipment; (4) Accuracies are not affected by variations in line voltage and there are no components which have aging effects.

The Graham variable speed drive may be furnished with or without built-in motor and with or without built-in gear reducer with output shaft parallel or at right angles, horizontal or vertical, up or down. Metering pumps may be furnished built into the transmission or coupled to the transmission and installed on a mounting plate. The Graham drive incorporates a built-in overload feature which protects both the transmission and the pump or feeder against momentary overload or jamming.

► The **Hobbs H-G Winder** was designed to solve major unwind problems in the processing of polyethylene, vinyls and other tender and easy to distort materials. Extreme simplicity and economy of operation are claimed for the winder. It is available from Hobbs Manufacturing Co., 26 Salisbury St., Worcester, Mass.

► An "integrated" **field coil** with an insulating system designed to protect electric motors and generators against atmospheric contaminants, such as carbon black, is produced by Allis-Chalmers Manufacturing Co. It is said to withstand the destructive forces of vibration and thermal shock, and require little or no maintenance.

Editorials..

Market Stability

► THE STABILITY of any market is a thing much to be desired, denoting a coherence between supply and demand and the favorable acceptance of the commodity in question. Where natural rubber market stability is concerned, however, confusion runs rampant. Persons close to the recent International Rubber Study Group meeting in Jogjakarta, Indonesia, report that the matter of rubber price stabilization was a factor of some importance at every session. As so frequently happens when faced with a near-insoluble problem, it was decided to turn the entire question back to the member countries for further study. The suggestion was also offered to member countries that they study the causes of fluctuations in the price of natural rubber. Conference sources advised members of the press that the proposal, in effect, left it to the member countries to decide whether they should study price stabilization as such—or study the causes of price stabilization. These sources said this result was "all that could be expected" from IRSG on a subject of this nature which was "controversial in the extreme."

During the conference, France presented a memorandum calling for a ceiling and floor price for natural rubber, the creation of a buffer stock to control these prices, and a stable relationship between the prices of natural and synthetic rubber. The United States' delegates made it clear inside and outside the conference that they could not support this proposal, the sources stated. They argued that natural rubber producers had no need for concern about the sale of natural rubber in the immediate future. Conditions, they asserted, guaranteed the natural rubber producer continued sales and a fair return. It was because of this opposition that France asked IRSG to refer its memorandum to the member countries for further examination.

In setting our ground for a discussion of this problem, certain things should be made clear. There are, obviously, two types of market stability. The first type is an artificially imposed stability, based on the creation of contrived balances. This type of stability has fear as its impetus: fear of competition—fear of economic loss—fear of the future. The second type of stability is that which is created by the market itself. As a reflection of the market it denotes those things of which we spoke earlier—a coherence between supply and demand based upon the favorable acceptance of the commodity.

It seems to us in this country that the second type of stability is indeed preferable to the first. This is not to say that we do not recognize the problems and even the fears of the natural rubber producers and the countries representing this viewpoint. The Rubber Manufacturers Association in a recent statistical report points out that in May of this year, synthetic rubber captured 63.25 per cent of the total new rubber market, a new record. In the face of these facts, we can understand and even sympathize with the natural rubber producers' viewpoint.

What cannot be accepted, however, is the advanced solution to the problem. As one well-known authority in the field recently wrote: "Some foreign nations seem not to understand that controls over commodities in our country (the U.S.) have been resorted to almost wholly as measures necessary for our national security, nearly always in time of war or serious emergency, and that peacetime applications of such measures would normally be resisted by the American public, accustomed to free competitive choice of materials."

The free, competitive stability of the marketplace does not come into being purely of its own volition. The stability of which we speak can be fostered and abetted by the actions of producers, consumers and all others dealing in one way or another with the commodity. Elsewhere in this issue there is noted a striking parallel between market conditions today and in the comparable period of 1955. We are, today, encountering a natural rubber market that seems to have hit "dead center", as one analyst put it, at a 32c level. The circumstances which placed the market at this plateau are very similar to those which existed in 1955 when, it will be remembered, the market suddenly "took off" to a 50c level. The fear is expressed in some quarters that the same thing may be happening today.

Apprehensions of this type do much to inhibit confidence in the market. Uncertainty enters the picture. Many consumers, unwilling to "take a chance", look elsewhere for the satisfaction of their needs and thus the problem is compounded. What is needed, then? What plan should be proposed to alleviate the conditions which cause the market to "take off?"

It is doubtful if any one person or organization has all the answers. Certainly, different solutions present themselves. As a start, some simple rules of fair play might be invoked. Natural rubber producers (and more importantly — the dealers) should stop playing "cat and mouse" with consumers. There have been too many instances of withholding of stocks in time of need in a desire for a still better price. On the other hand, consumers should view their projected requirements in a more realistic light and place their orders accordingly. More stringent standards need be agreed upon and, more important, followed by all. The speculative elements in the market should be curtailed. It is one thing to invest in a reasonable desire for profit; it is entirely another matter when a pure gamble is involved.

Natural rubber has many worthy qualities to offer the manufacturer. It is only by a realistic appraisal of the situation, however, that any ultimate gain will be achieved. There need be no recriminations by the holders of one viewpoint against another. The world is growing smaller and we all must live in it together. Let a new approach be taken to the problem of stability and a new and more pleasing picture may yet emerge.

Highlights Sidelights *of the News...*

August, 1957

The Federal Trade Commission has charged the Union Carbide Corp. with violating the anti-merger law by acquiring the Visking Corp., one of its major customers...FTC states that Union Carbide is the nation's biggest producer of polyethylene resins and that Visking, which bought 90 per cent of its resin requirements from Union Carbide, was the largest producer of polyethylene film...Union Carbide president Morse G. Dial states that the acquisition was legal and proper (page 827).

The Rubber and Plastics Division of the Instrument Society of America has announced plans for a symposium on "Instrumentation for the Rubber and Plastics Industry" to be held on September 12 in Cleveland, Ohio. .The symposium will be held in conjunction with the 12th Annual Instrument-Automation Conference scheduled for the week of September 9 (page 828).

A total of 3,170,000 long tons of new rubber will be required in 1958 according to the International Rubber Study Group, which recently concluded its Thirteenth Meeting in Indonesia ...Of this total, it is expected that 1,910,000 long tons of natural rubber will be required while the balance will be synthetic rubber...The IRSG conference was held behind closed doors so that the deliberations would not affect the rubber market (page 825)...For comments on market stability, see this month's editorial (page 823).

According to Raymond C. Firestone, president of the Firestone Tire & Rubber Co., the synthetic rubber industry is entering its greatest period of growth...This growth, he declared, will make a favorable impact on the industrial progress of the United States...Firestone has just completed a $35,000,000 synthetic rubber expansion program which included the construction of a 40,000 ton butadiene plant (page 835).

C & C Super Corp. has reorganized all its holdings with all manufacturing activities assigned to National Phoenix Industries, Inc., a wholly owned subsidiary...Now under National Phoenix is the Lorraine Manufacturing Division with plants at Maywood, N.J. and Lake Alfred, Fla....Lorraine produces a line of mechanical goods, including can closures (page 828).

Polyethylene is heading for another major year in Canada with consumption this year estimated at 30,000,000 pounds... Multi-million dollar expansion programs are now being planned to cope with potential requirements of 50,000,000 pounds by 1960 (page 852).

NEWS REPORTS and Industry Activities

IRSG Ends Indonesia Meeting Amidst Predictions of Continuing Stability in 1958 Market Conditions

Conference held behind closed doors to prevent deliberations from affecting rubber market

► The Thirteenth Meeting of the International Rubber Study Group, held at Jogjakarta, Indonesia, held on June 24 to July 1, ended amidst predictions of "continuing stability in market conditions" for the coming year. The conference was held behind closed doors in an attempt to prevent its deliberations from affecting the rubber market. The Minister of Agriculture in the Government of the Republic of Indonesia, Dr. Sadjarwo, served as chairman for the conference with Dr. Schafer, head of the delegation of the Federal Republic of Germany, and Lakshnakara Kashemsanta, head of the delegation from Thailand, as vice-chairmen.

The meeting was attended by delegations from Australia, Austria, Belgium, British Colonial and Dependent Territories, Canada, Ceylon, Czechoslovakia, Denmark, France, Federal Republic of Germany, Hungary, Indonesia, Italy, Japan, Liberia, Netherlands, Thailand, United Kingdom, and the United States of America, together with observers from the Food and Agricultural Organization and from the International Rubber Development Committee.

Statistical Position Examined

The group examined the world's statistical position and made estimates for natural and synthetic rubber requirements and production. It was estimated that in 1957 the world might consume some 1,910,000 long tons of natural rubber and approximately 1,260,000 long tons of synthetic rubber apart from the synthetic rubber produced in non-member countries. In regard to production, it was estimated that the world production of natural rubber would be around 1,875,000 long tons while production of synthetic rubber in member countries would be around 1,280,000 long tons.

The tables of estimates made by the group, which appear elsewhere in this story, show that estimated production and requirements of both natural and synthetic rubber are approximately in balance. The group emphasized again the importance of continuing work on (1) the development of planting material combining a high level of disease resistance with a high yield, and (2) continuing international cooperation in the exchange of improved planting material between the research centers and rubber growing countries of the world, and noted with satisfaction that steady progress continued in the development and exchange of high yielding and disease resistant strains of Hevea rubber between the research institutes and plantation companies in territories in South East Asia, in West Africa and in the Western Hemisphere.

It also noted that following on recom-

Meeting Highlights

As the conference developed, the delegates:

►Estimated world consumption of natural rubber in 1957 at 1,910,000 long tons; of synthetic rubber, 1,260,000 long tons.

►Estimated world production of natural rubber in 1957 at 1,875,000 long tons; of synthetic rubber, 1,280,000 long tons (in member countries).

►Noted with regret the deterioration which took place during 1956 in conformance to grade in rubber shipments to the U.S.

►Noted with satisfaction the statistical forecasts which indicate continuing stability in market conditions.

►Urged continued consideration of the need for possible action to reduce fluctuations in the natural rubber market.

►Emphasized the importance of continuing work on the development of planting material combining high level of disease resistance with high yield.

►Cited the need for international cooperation in exchange of improved planting material between research centers and rubber growing countries.

Table I—Estimated Natural and Synthetic Rubber Requirements in 1957

(in 1,000 long tons)

	Natural	Synthetic	Total
United States	560	930	1,490
United Kingdom	184	57	241
France	135	41	176
Federal Republic of Germany	129	47	176
Japan	122	15	137
Canada	45	51	96
Italy	55	17	72
Czechoslovakia	50	—	50
Australia	30	20	50
Belgium	22	7	29
Netherlands	20	4	24
Austria	10	3	13
Hungary	8	—	8
Denmark	7	1	8
Other Countries	533	67	600
Total	1,910	1,260	3,170

mendations of the Eleventh and Twelth Meetings of the group, there had been a growing liaison between producers' and consumers' research organizations. The group noted various new developments in connection with synthetic polymers and their application and also observed that work was proceeding in natural rubber producing organizations on graft polymers in natural rubber and the development of special types of natural rubber with distinctive properties.

The group recorded its appreciation of the careful research and experimental work carried out by producers' research and technical organizations into technically classified rubber but noted that the large scale application of this material was not at present practicable and felt that consumers requiring technically classified rubber should make their own arrangements through market channels.

The group reviewed the progress since October, 1955, in the creation of international type descriptions and packing specifications for natural rubber, and noted the very real progress made in this field by the publication of the book entitled "Type Descriptions and Packing Specifications for Natural Rubber Grades Used in International Trade." The group noted with pleasure that this book had been adopted by the Rubber Manufacturers Association of the United States and endorsed by the Rubber Trade Association of New York and twenty-three other rubber producing and consuming organizations which virtually represented the whole of the world trade in rubber.

Table II—Estimated Natural Rubber Production in 1957

(in 1,000 long tons)

Indonesia	670
Malaya	627
Thailand	134
Ceylon	91
Vietnam	67
British Africa	43
Sarawak	40
Liberia	37
Belgian Congo	34
Cambodia	31
Other British Borneo	21
Burma	13
Papua	4
French Africa	4
Other Countries	59
Total	1,875

Quality Problem Noted

It was noted with regret that according to statistics supplied by the United States delegation, a deterioration had taken place during 1956 in the conformance to grade in rubber shipments to the United States, especially in the amber and thin brown crepes. Representatives of other consuming countries confirmed that there was a general trend towards lower conformance to grade.

It was recognized that consumers were now paying much more attention to this matter and the group appreciated that the apparent deterioration might well have been partially attributable to this fact. The group reiterated the view expressed at previous group meetings that other producing countries should adopt some supervision of grading and packing similar to that conducted in Malaya.

The group viewed with satisfaction that the statistical forecast for the coming year indicated continuing stability in market conditions. It also noted that many of its member governments attached great importance to the development of measures designed to maintain and increase stability in the natural rubber market, while others were of the opinion that the expected continuance of high demand for new rubber would assure stability.

In view of the apprehension of some countries over possible adverse developments in the future, the group decided, in connection with its review of the future, that it should, at its next regular meeting, continue consideration of the need of possible action to reduce fluctuations in the natural rubber market.

In the intervening period, the group expected that member governments would either individually or collectively devote more detailed study to the matter so that they could report their conclusions to the group. It was noted that it would be helpful if member governments chose so far as was practicable to keep each other informed through the Management Committee of the group of the progress of their studies.

British Colonial and Dependent Territories, Canada, Ceylon, France, Federal Republic of Germany, Indonesia, Italy, Netherlands, the United Kingdom and the United States of America will be members of the Management Committee until the next meeting of the group. When in August, 1957, Malaya becomes a sovereign independent member of the British Commonwealth, it will take the place of the British Colonial and Dependent Territories delegation on the Management Committee. The British Colonial and Dependent Territories delegation to the Study Group will then cease to exist and the territories other than Malaya now represented by it will continue to collaborate with the group by other means. The group decided that it would hold its next meeting in May or June, 1958, at a place and date to be decided later.

Sue To Cancel Stock Sale

► Two owners of Savoy Machine Co. have sued in Common Pleas Court to upset a deal by which they bought out the stock interest of the third owner. Charles L. and William L. Reed and the company brought the suit against Norman A. Pease, their former associate, who is now with Savoy Products Co. in association with John Toth. The Messrs. Reed say Mr. Pease sold them his 50 shares of stock in Savoy Machine Co. for $23,000, with a note for $16,450 being part of the consideration. Mr. Pease agreed, as part of the transaction, not to compete with Savoy Machine for five years, it is charged. According to Messrs. Reed, Mr. Pease recently associated himself with Mr. Toth to produce and sell the same products to the same customers. Until Mr. Pease joined the firm, Savoy Products Co. was a sales organization only, according to the suit. Savoy Machine makes industrial wheels, wheels for military usage and air bag stems.

Table III — Estimated Synthetic Rubber Production in Member Countries in 1957

(in 1,000 long tons)

United States	1,135
Canada	130
Federal Republic of Germany	13
United Kingdom	2
Total	1,280

FTC Charges Union Carbide With Anti-Merger Violation

► The Federal Trade Commission has charged the Union Carbide Corp. with violating the anti-merger law by acquiring the Visking Corp., one of its major customers. The commission, in its complaint, said that Union Carbide was the nation's biggest producer of polyethylene resins used to make polyethylene film; and that Visking, which had bought 90 per cent of its resin requirements from Union Carbide, was the largest producer of the film. The film is used as transparent wrapping for foods and other products.

The commission said that by taking over Visking, a Chicago concern, Union Carbide put itself in a position to hinder competition and gain monopoly control over the production and sale of polyethylene resin or film. The commission said that Visking was the chief producer of synthetic sausage casings, competing with only two other concerns in the field. Because of its "greater financial resources," Union Carbide also would be in a position to lessen competition in this market, the commission charged. Union Carbide was allowed thirty days in which to answer the complaint. A hearing is scheduled September 30 in New York City before a commission examiner.

Union Carbide acquired the Visking Corp. on December 31, in an exchange of 864,449 shares of stock. Visking's 2,900 shareholders received one share of Union Carbide in exchange for every 2½ shares of Visking. Visking was formed in 1925 to make meat casings by a process using cellulose derived from cotton linters. During World War II the company pioneered the production of polyethylene film as a weather protector for armament and ammunition at the request of the Government..

Increasing Importance Cited

The film has become increasingly important in the packaging industry for foods, clothing, soft goods, hardware and other items. In the construction industry it is used as a moisture vapor barrier. A synthetic fabrics division formed by Visking in 1947 was sold in February of 1956. Visking's 1956 sales were approximately $45,000,000. Last year's net was not reported, but was indicated as about $5,100,000 in Union Carbide's annual report.

In reply to the FTC charge, Morse G. Dial, president of Union Carbide, stated that the company's acquisition of Visking last December was legal and proper. Mr. Dial said a thorough study was made before the acquisition occurred and the conclusion was reached that the action was legal and proper. He added that Union Carbide would take whatever action necessary to establish its position. "In the meantime," he declared, "we will continue to carry out our plans and to conduct our business in normal fashion."

► Synthetic Rubber Sales Division of the Shell Chemical Corp., Torrance, Calif., has released a technical bulletin on S-2105, a cold high-solids latex used in latex foam.

O. B. Samler

T. J. Farley

Vanderbilt Announces Promotions of Samler and Farley

► R. T. Vanderbilt Co., New York, N. Y., has announced that Ogden B. Samler has been transferred from the New Jersey sales territory to the New York office. In his new position, Mr. Samler will assist in matters concerning technical sales and service of rubber chemicals. Prior to his position as a technical sales representative, Mr. Samler was employed for several years as a chemist and compounder at the company's rubber laboratory in East Norwalk, Conn. It has also been announced that Thomas J. Farley has been named as technical sales representative for the concern. His sales territory will include Philadelphia, New Jersey, the New York metropolitan area and southern Connecticut. For the past two years, Mr. Farley has been a chemist and compounder in the laboratory at East Norwalk. He is a native of Philadelphia and a graduate of Stevens Institute. Prior to joining Vanderbilt in 1955, he had wide experience in rubber compounding and development at Essex Rubber Co., U. S. Rubber Reclaiming Co. and within the U.S. Rubber Co. organization.

Acquires Cobalt 60 Unit

► A radioactive cobalt 60 unit, a new laboratory tool which researchers expect will speed the pace of scientific investigation and open doors to improved organic chemicals of the future, has been acquired by the Dewey and Almy Chemical Company Division of W. R. Grace & Co. The cobalt 60, a by-product of peacetime atomic energy, emits intense gamma rays, reliable and continuous energy for research in radiation chemistry.

Dewey and Almy's cobalt is a slender tube two feet long. It received its radioactivity during bombardment with uranium neutrons in the atomic pile at the Brookhaven (L. I.) National Laboratories of the Atomic Energy Commission. For research use, the cobalt is sealed in a protective two-ton lead sheathing about the size and shape of a 55-gallon drum. Samples to be exposed are lowered inside the cobalt tube with a remote control "arm". The samples remain surrounded by the cobalt for periods ranging from an hour to a week. Materials exposed cannot retain radioactivity; they can be handled immediately after withdrawal from the cobalt.

Plan Largest Exposition

► The 26th Exposition of Chemical Industries, which will be held at the Coliseum in New York, N. Y., December 2 to 6, has already drawn a large number of enrollments. The Exposition will occupy all four floors of the Coliseum and is expected to be the largest display of its kind ever staged. Several new sections have been added to this year's exposition. They include the Chemical and Chemical Materials section; the Rocket and Satellite section, sponsored by the American Rocket Society and the Laboratory Materials and Supplies section. Applications of laboratory methods to process control are multiplying rapidly and this growth will be reflected at the Exposition. There will be displays of chemicals and raw materials, process equipment and machinery, material handling and packaging equipment, instruments and controls, laboratory equipment and supplies and many others. Since its inception in 1915, the Exposition of Chemical Industries has been under the management of the International Exposition Co., 480 Lexington Ave., New York, N. Y. E. K. Stevens, president of the company, is manager of the Exposition.

Boston Rubber Group Outing Attracts Record Attendance

► Approximately 670 members and guests of the Boston Rubber Group attended the annual summer outing held on June 14 at the Andover Country Club in Andover, Mass. The sporting events enjoyed by the group consisted of either a 9-hole or an 18-hole golf tournament, a softball game, a horseshoe pitching contest, darts, tub-and-ball game, and a putting contest. All in attendance received door prizes and prizes were also awarded to the winners of the various events. A gala dinner was served. The Outing Committee consisted of James J. Breen (Barrett & Breen), chairman, and George E. Herbert (Tyer Rubber) and Harry A. Atwater (Malrex Chemical). Lyle Longworth (Monsanto Chemical), directed the 18-hole golf tournament. Winners in this event were as follows:

Low Gross—J. Simpson (Hodgman Rubber), A. E. Nelson (Goodrich), J. Hall, C. Lyons (Rubber Corp. of America), W. A. Maguire (United Carbon). *Low Net*—G. Acker, J. L. Powell (Goodrich), L. Lord (Columbia-Southern), A. I. Ross (American Biltrite), P. Alasso (Union Carbide), W. McBrien (Harshaw Chemical); *Kicker's Handicap*—W. Connery (Industrial Solvents), E. Emerson, N. Kasnet (Garnor Coated Products), J. Hart (Taylor Instrument), L. Longworth, J. Ryder (Goodrich Chemical), J. Hagerty (A. C. Nispel), R. O. Babbit (R. T. Vanderbilt), K. Sears, and J. Beale.

Nearest Pin—P. Manchester (Union Carbide) and B. McLain. *Most Sixes*—J. Nolan (Avon Sole). *Most Sevens*—A. Brown (Brookside Mfg.). *High Gross*—M. Pertigao. *High Net*—T. Reed (Monsanto Chemical) and D. Flagg.

The nine-hole golf tournament was also directed by Mr. Longworth. Winners in this tournament were: *Low Gross*—J. Blondstrom. *Low Net*—E. Mack. *High Gross*—R. Wittenauer (Deecy Products). *High Net*—R. Cummings. *Kicker's Handicap*—J. Kearns (Warwick Chemical) and R. Ross.

The softball game was supervised by R. Edwards (Stedfast Rubber), while J. T. Ryan (Haartz-Mason) and A. Anisman served as umpires. The winning team, the "Swamp Yankees", was composed of the following members: C. Ayres (Stedfast Rubber), R. Hale (Stedfast Rubber), C. Blow (Beebe Rubber), W. Griffin (Stedfast Rubber), J. Burt (DuPont), Z. Janiak (Stowe-Woodward), E. Serocki (Stowe-Woodward), C. Ennis, M. Duca (Hodgman Rubber), and J. MacDonald (H. Muehlstein).

J. Cullen (Marbon Chemical) served as director of the horseshoes tournament. The winning teams were composed of: E. Weber (Goodrich) and P. Blanchard (T. C. Ashley); J. Colell and R. Kiblim (Avon Sole); G. B. Cotton (Goodrich) and C. P. Wilson (Sun Oil); F. Duemmling and D. May (Goodrich).

The darts game was under the direction of N. Herthel (Goodrich). The following members were winners in this event: R. E. Leeds (Taylor Instrument), J. Carreiro (Stedfast Rubber), E. Serocki (Stedfast Rubber), J. Urbano (Avon Sole), and C. Tomczykowski (Borden Chemical).

H. Anthony (Tyer Rubber) was in charge of the tub-and-ball game which was won by: A. Ryan (Raffi & Swanson), P. Blanchard (T. C. Ashley), B. Beeson (Diamond Alkali), A. Peros (Goodrich Chemical), and A. Panzeri (Goodrich).

The putting contest was under the direction of J. Fitzgerald (Harwick Standard). The following members won honors in this event: F. Ward (American Biltrite), E. Hendrick (Avon Sole), E. Kittredge (Angier Adhesives), P. Blanchard (T. C. Ashley), E. Osberg (National Polychemicals), J. Clifford (Hanover Rubber), and W. Smith (Hanover Rubber).

C & C Reorganizes Holdings

► Lorraine Manufacturing Division of the C & C Super Corp., will be assigned to National Phoenix Industries, Inc., a wholly-owned subsidiary, in a proposed reorganization of C & C Super. There will also be a spin-off of the corporation's food and beverage and manufacturing operations. A special stockholders' meeting was to have been held on July 29 at Wilmington, Del., to vote on the proposed reorganization. Stockholders were to have been asked to approve a change in the corporation's name to C & C Television Corp., a decrease in the number of directors from 13 to 8, and an amendment of the outstanding options relating to common stock. A proxy statement mailed to shareholders states the corporation proposes to "devote itself solely to its television operations and that all its food, beverage and manufacturing operations be carried on by National Phoenix Industries, Inc., a wholly-owned subsidiary, and that all the capital stock of National Phoenix be distributed to the stockholders of the corporation." Assigned to National Phoenix are the assets of C & C Super's Lorraine Manufacturing, Power Products, and Nedick's divisions. National Phoenix will assume the liabilities of these divisions. Lorraine Manufacturing produces rubber specialties at plants in Maywood, N. J. and Lake Alfred, Fla.

ISA Plans Symposium On Rubber Industry Instrumentation

► The Rubber and Plastics Division of the Instrument Society of America has announced plans for a symposium on "Instrumentation for the Rubber and Plastics Industry" which will be held on September 12 in Cleveland, Ohio. The symposium will be held within the framework of the week-long 12th Annual Instrument-Automation Conference in Cleveland scheduled to be held on September 9-13. Dr. David R. Davis (General Tire) has been named symposium chairman.

Keynote address on the scope of the sessions will be presented by Charles R. Zimmer, president of the Industrial Gauges Corp. Beginning with a discussion of instrumentation and control familiar to the industry, the sessions will develop the application of radiation gaging and analytical instrumentation to process control of polymeric materials.

Applications of a low level DC instrumentation system will be covered in one paper, discussing such parameters as design, requirements, and performance characteristics of the system. All applications of the instrumental techniques used in testing the physical properties of rubbers and plastics will be covered. Included will be details relating to the automatic control of temperature, ozone concentration, stress, restitution of impact and plasticities. Specific applications in the synthetic latex process and several plastic processes are to be presented in detail.

Other participants in the day-long instrumentation for the Rubber and Plastics Industry Symposium include: Dr. Allen S. Powell (Case Institute), Eugene L. Mleczko (Aerojet-General), Charles E. Sitz (Goodrich), H. L. Cook, Jr., (Ohmart), and E. Paul Morehouse, (Goodyear).

Registration for this Rubber and Plastics Symposium is $5.00 for members of ISA and $8.00 for non-members. Registration headquarters will be maintained at the Cleveland Auditorium. Advance registration may be made to H. S. Kindler, Director of Technical Programs, Instrument Society of America, 313 Sixth Avenue, Pittsburgh 22, Penna.

ACS Rubber Division Meeting Dates Set Through 1962

DATE	CITY	HOTEL
Sept. 10-13, 1957	New York, N. Y.	Commodore
May 13-16, 1958	Cincinnati, Ohio	Netherlands
Sept. 9-12, 1958	Chicago, Ill.	Sherman
May 12-15, 1959	Los Angeles, Calif.	Biltmore
Nov. 9-13, 1959	Washington, D. C.	Shoreham
May 24-27, 1960	Buffalo, N. Y.	Statler
Sept. 13-16, 1960	New York, N. Y.	Commodore
May 16-19, 1961	Louisville, Ky.	Brown
Sept. 5-8, 1961	Chicago, Ill.	Sherman
May 15-18, 1962	Boston, Mass.	Statler

Sharpening Trade Competition Seen by FBRAMA Official

► The annual general meeting of the Federation of British Rubber and Allied Manufacturers' Associations, held in London on June 20, featured the presentation of the *President's Review* by Reay Geddes, retiring president and director of the Dunlop Rubber Co.

Mr. Geddes said that the main influence in the past two years has been the sharpening of competition as a result of economic forces and government policies. "In respect of overseas trade," he said, "liberalization begins to look like the forerunner of industrial free trade in Europe. The government, it seems, intends industry, by being highly competitive in Europe, to become still more successful in world markets."

The rubber industry, he said, has taken steps to supplement its traditional sources of raw material, by including synthetic rubbers and plastics, in order to achieve greater competitive power. The tendency has become to use whatever raw material is likely to be most effective in a given situation, regardless of whether it is new or old, natural or synthetic. The rubber industry is internationally competitive over a wide field and also plays its part in the export of techniques and capital to underdeveloped countries.

However, Mr. Geddes pointed out, a government fiscal policy which would do more to encourage research and re-investment at home is necessary. He said "the rubber industry has a high rate of development and a high rate of obsolescence, and together with other industries, similarly placed, we cannot rest content if our competitors abroad are better treated."

Mr. Geddes also appealed to the right kind of young recruits to join a large and growing industry, which is in touch with progressive development in every branch of manufacture and every department of life and leisure.

Enjay Staff Changes Announced

► Enjay Co., Inc., New York, N. Y., has announced several personnel changes. R. A. Short has been named assistant to the manager of the Western Division. Mr. Short joined Enjay in 1946 as a sales trainee. Subsequently, he served as a sales representative and supervisor in the Alcohols and Chemical raw materials field. Prior to his new assignment, he was associated with the sales of butyl rubber. From 1943 to 1946, he was a lieutenant in the Navy. Mr. Short was graduated from Clarkson College of Technology in 1942 with a B. S. degree in chemical engineering. In another staff change, Charles E. Farnsworth, formerly senior market development engineer in the Market Development Division, has been named assistant manager. Richard M. Howlett, previously with the Paramins Division has been transferred to the Market Development Division as senior market development engineer. In the Paramins Division, Brian Casey, formerly technical representative, has been appointed assistant manager of the division.

R. S. Savage

J. R. Kelly, Jr.

Savage and Kelly Named Goodyear Chemical Representatives

► The appointment of Robert S. Savage and Joseph R. Kelly, Jr. as special representatives of the Chemical Division of the Goodyear Tire and Rubber Co. has been announced by C. O. McNeer, general sales manager of the division. Mr Savage has been assigned to the Boston district office and will provide service for products marketed by the Chemical Division's Rubber, Plastics and Coatings Departments in the New England area. Mr Kelly, who has been assigned to the Cleveland office, will service rubber processing companies located in the mid-central states.

Mr. Savage joined Goodyear in 1950 as a squadron trainee and later was engaged in film research and fuel cell development for four years. In 1955 he was granted a leave of absence to attend Harvard Business School. Returning to Goodyear in 1957, he was assigned to the Chemical Division where he received specialized training in sales and sales service. Mr. Savage holds a bachelor of science degree in chemical engineering from Syracuse University and a master's degree in business administration from Harvard University.

Mr. Kelly joined the company in June of this year with five years previous experience in the rubber industry. He has performed both sales and development work in connection with the application of rubber and rubber products. He trained with the Chemical Division's rubber and rubber chemicals department in preparation for his field assignment. He was graduated from Antioch College with a B.S. degree in chemistry in 1952.

Financial Briefs

► General Telephone Corp., direct and indirect beneficial owner of more than 10 per cent of the common stock of the General Cable Corp., has bought 5,000 common shares, increasing its direct holdings to 259,000. Holdings by a subsidiary company amount to 125,000 shares.

► J. R. MacDonald, chairman of the General Cable Corp., has acquired 6,000 common shares through stock option in April and sold 11,000 shares, leaving direct holdings of 20,000 shares.

► William L. McNight, chairman of the Minnesota Mining & Manufacturing Co., has sold 7,170 common shares, reducing his direct holdings to 965,510.

► James A. Walsh, Jr., vice-president of the Armstrong Rubber Co., has made gifts of 800 class A common shares, reducing his direct holdings to 33,453 shares.

► Roland H. Guinzburg, president of the I. B. Kleinert Rubber Co., has made gifts of 1,000 common shares, reducing his direct holdings to 7,680.

► John G. Ordway, director of the Minnesota Mining & Manufacturing Co., reports indirect holdings of 1,677,068 common shares, after sale of 16,000 shares by Ordway Trust, the income from which he has a 20 per cent interest. Mr. Ordway also reports direct ownership of 20,000 shares.

► American Seal-Kap Corp. of Delaware, direct owner of more than 10 per cent of the stock of the National Rubber Machinery Co., has acquired 4,910 common shares through the exercise of rights to purchase at $27 per share, increasing direct ownership to 103,110 shares of the company's common stock.

Alco Appointments Set

► Three important staff assignments have been announced by the Alco Oil & Chemical Corp., Philadelphia, Penna. C. E. Cain, formerly head of Alco's sales service laboratory, has been made head of a new Planning Department which will handle work on various new Alco textile, chemical and rubber products as well as supervise process details. Succeeding Mr. Cain as head of the service laboratory is Carl W. Denfeld, a member of the chemical sales service staff of Alco since 1953. In addition to staff, Robert A. Moctezuma joins Alco as an analytical chemist. Mr. Cain, who is a 1941 chemical engineering graduate of the University of Oklahoma and a Lieutenant Commander in the U. S. Naval Reserve, was associated with Firestone Tire & Rubber Co. at Lake Charles, La., and with the Toyad Corp., Latrobe, Penna., prior to joining Alco in 1952. Mr. Denfield received his degree in chemistry from the University of Pennsylvania in 1946 and in his work as a chemist prior to joining Alco was associated with Montgomery Bros. Co., Philadelphia, and with the Thermoid Co., Trenton, N. J. Mr. Moctezuma is a 1954 graduate in chemistry of the University of Tampa, and is a member of the American Chemical Society. He had previously served as chief chemist of Davis & Weil Mfg. Co., Tampa, Fla., and as an analytical chemist and group leader with Smith, Kline & French Laboratories, Philadelphia.

E. R. Sutton, Jr.

Joins Thiokol Sales Staff

► Ernest Ray Sutton, Jr., has been named technical sales representative in the Chicago territory for the Thiokol Chemical Corp., Trenton, N. J. Mr. Sutton, who has been in the chemical industry for almost eight years, was formerly employed by the Pure Oil Research and Development Laboratories of Crystal Lakes, Ill., where he did research and development work and analytical testing. A native of Salem, W. Va., Mr. Sutton received a B. A. degree in chemistry at Ohio University in Athens, Ohio.

Buffalo Plans Lecture Series

► In the fall of 1956, the Buffalo Rubber Group, in cooperation with Millard Fillmore College of The University of Buffalo, inaugurated a highly successful lecture series on rubber technology. Included in this series were: Rubbers and compounding ingredients, their usages and their functions; processing methods and problems; testing and testing procedures and basic compounding methods. Seventy-nine members representing the management of twenty-one companies in western New York and Canada attended the series. Numerous inquiries and requests for a repetition of the lectures or the possibility of a more advanced series has led the Educational Committee of the Buffalo Rubber Group and the University into an effort to survey member firms and other interested companies to explore the extent of these requests as a guide to formulating a program for next fall. Tentative plans have been made to conduct a new lecture series beginning October 1, 1957, on twelve Tuesday evenings, 7:00 to 9:00 p.m., fee: $30-40 dependent upon registration.

Three Promotions Announced

► A. Schrader's Son Division of the Scovill Manufacturing Co. has announced the promotion of Clarence H. Wilkens from Akron manager to assistant general sales manager. Succeeding Mr. Wilkens as Akron manager will be Don C. Baker, who has been assistant manager since 1954. Richard E. Ruhe has been named assistant manager. From 1920 to 1937, Mr. Wilkens was a field representaive of Schrader's, becoming service manager in 1937 and head of the Akron branch in 1949. Mr. Baker joined the company in 1948, in the Technical Service Department of the main plant at Brooklyn, N. Y. The following year, he was transferred to Akron as a technical representative and was named assistant manager three years ago. Mr. Ruhe has been with the firm since 1946 and was in the Production Department at Brooklyn until 1952, when he was transferred to the Akron office in sales.

Safety Record Established

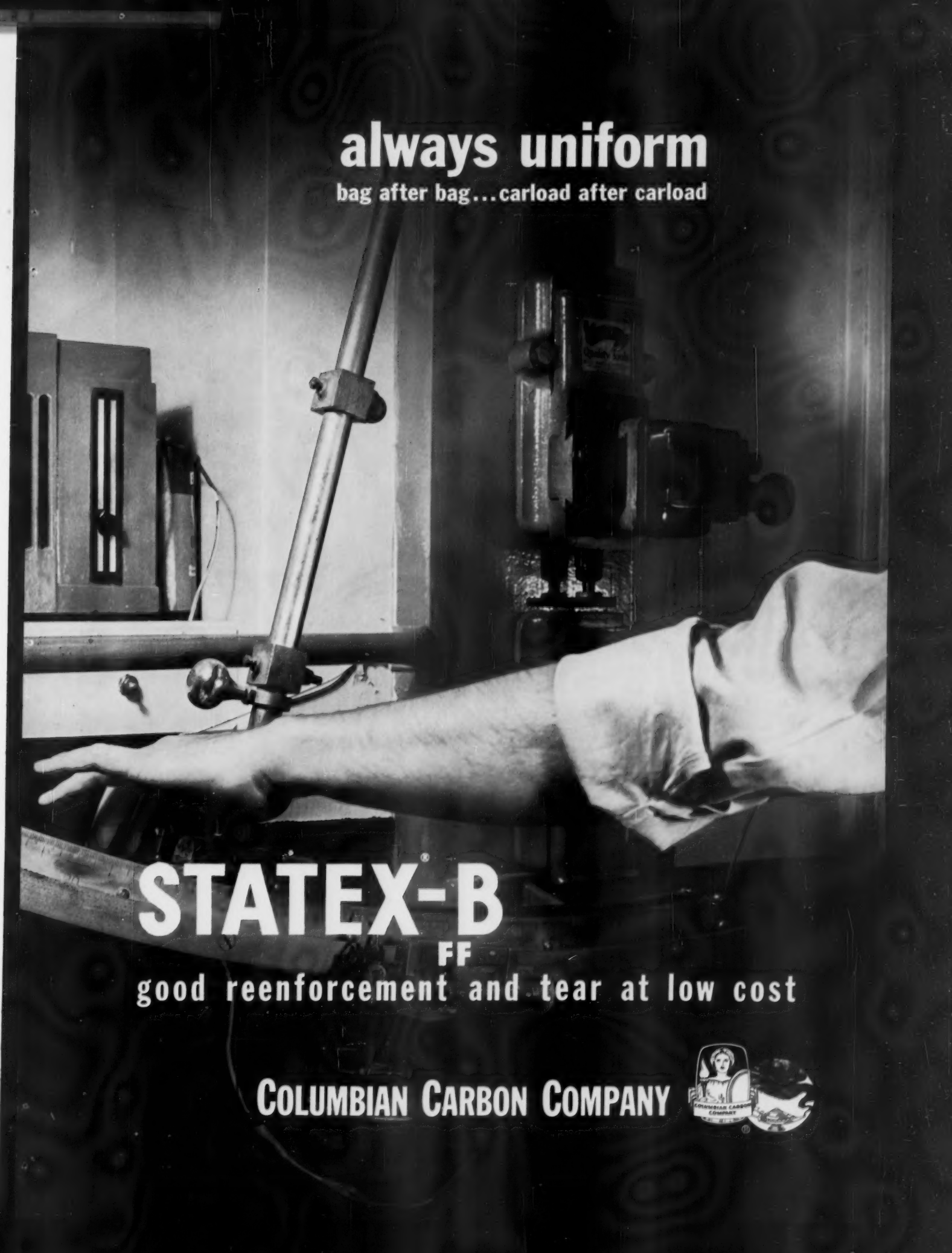
► Firestone Tire & Rubber Co., Akron, Ohio, has announced the establishment of a new world's record for on-the-job safety in the tire industry. The company's Pottstown plant has completed more than 7,800,000 man-hours without a lost time injury, surpassing the previous safety record of 7,722,000 no-injury man-hours set at the company's Memphis, Tenn., plant in 1953, and setting a new world's safety record for the company's tire plants. Pottstown is the fourth Firestone tire plant to establish a new injury-free record for the tire industry in the last ten years. Previous record holders, in addition to Memphis are the Des Moines plant and Akron's number two plant. During the past 12 years, the company has received the highest award of the National Safety Council nine times in recognition of the firm's outstanding safety record in all of its plants.

Midget Tires Advance Progress of Medicine

► The progress of medicine is now being advanced by midget tires. Doctors at Los Angeles Children's Hospital are using as surgical headrests four-inch wide tires normally distributed by the Goodyear Tire & Rubber Co. as enclosures for ash trays. Placed under a young patient's head as he is being intubated (insertion of a tube to aid breathing under anesthesia), the tiny tire provides just the right kind of cushioned support needed during the pre-surgical procedure. In using the tire ash tray as a medical aid, the glass portion is removed and the tire inserted in a sterile bag. A member of the Children's Hospital staff hit upon the novel use of the midget tire while he was browsing through a toy shop.

Goodrich Industrial Products Plans Construction Program

► B. F. Goodrich Industrial Products Co. plans a construction program to provide increased manufacturing and warehousing facilities at the Koroseal plant site in Marietta, Ohio. With construction scheduled to begin immediately, the building project should be completed within three months. The new building will provide warehousing space to stock coated fabrics, garden hose and other Koroseal products. The expansion program will also include new production equipment for making all types of products presently manufactured at Marietta. The company estimated that 50 new jobs will be created by the expansion.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STATEX-B FF
(Fine Furnace)

STATEX-M FEF
(Fast Extruding Furnace)

STATEX-93 HMF
(High Modulus Furnace)

FURNEX® SRF
(Semi-Reinforcing Furnace)

COLUMBIAN CARBON COMPANY
380 Madison Avenue, New York 17, N. Y.

Transferring Plant Operations

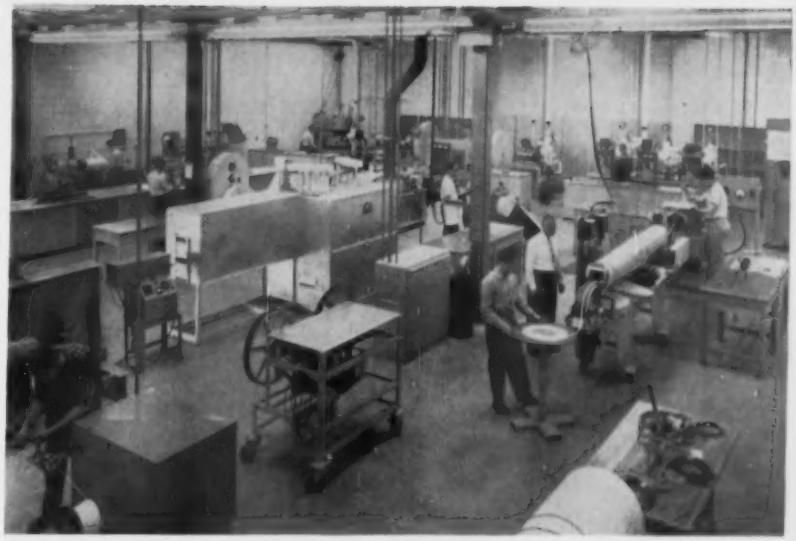
► B. F. Goodrich Co., Akron, Ohio, has announced plans to consolidate the manufacturing operations now located in Plant 4, the old Miller Rubber Co. plant, with those of Plants 1 and 2. During the next 12 months, certain plant operations will be moved to locations in Plants 1 and 2, while others will be consolidated with similar operations in the two plants. A company spokesman said no plans have been made for the disposition of the plant after it is vacated. A letter to employees in Akron plants explained the reasons for the proposed consolidation. A number of product lines previously manufactured at Plant 4 had been discontinued or transferred because Plant 4 costs were too high to permit the company to compete successfully against other rubber companies. Included in this group were inflatable products, play ponds, sponge products and rubber gloves. The purpose of the consolidation is to achieve lower production costs, thereby avoiding discontinuation of production and sale of other products now manufactured at Plant 4, the letter said.

Named Director Of Sales

► Stanley M. Freeman, vice-president of the Witco Chemical Co., New York, N. Y., has been appointed director of sales for the company's Organic Chemicals Division. His headquarters will be located in the Witco executive offices in New York City. Mr. Freeman joined Witco in 1948 and was named vice-president in charge of sales and manufacturing for the company's Western Regional Division in 1951, with headquarters in Los Angeles. Under his direction, this division has grown and now represents a substantial part of the company. Before 1951, Mr. Freeman was a technical sales representative for the company. He is a chemistry graduate from M. I. T. and has a Master of Science degree from the University of Massachusetts. During World War II, he was a Lt. Commander in the Navy. Mr. Freeman is a member of the American Chemical Society, Los Angeles Rubber Group, Los Angeles Paint Production Club, Society of Plastics Industry and the Los Angeles Athletic Club.

New Type Convertible Top

► Aldan Rubber Co., Philadelphia, Penna., has developed a new type of convertible automobile top, consisting of Hypalon coated fabric. Hypalon coatings are said to be waterproof, dirt and heat resistant and long wearing. Field tests, conducted by the company, in various sections of the country and under different climatic conditions have demonstrated that Hypalon may be a possible answer to the convertible top problems encountered in the past. Hypalon coated fabrics can be cleaned by light scrubbing with soap and water without harming the fabric or removing the coating, according to the company. A disadvantage of the new coating material is that the "hard top" appearance of the Hypalon coated surface is completely different from the appearance of fabrics associated with convertibles.



Dow Corning Opens New Laboratory For Silicone Rubber Fabrication

New Quarter-Million Dollar Installation Said to be Largest of its Type in U.S.

► Eleven years ago, the Dow Corning Corp. opened its first Silastic fabrication laboratory. Exclusively devoted to developing practical techniques for fabricating silicone rubber, it consisted of two men, a handful of equipment, and as little precious space as possible. Thanks in part to the work done at the laboratory, however, silicone rubber sales have increased 40 times since then. This June, after several previous expansions, Dow Corning is starting from scratch and is again opening the largest lab of its kind in the country: the new, quarter-million-dollar Silastic Experimental Fabrication Laboratory.

Housed in its own 6,400 square foot building, the laboratory and its eleven man staff are still primarily dedicated to the development of fabrication techniques. In practice, however, this is known as "customer service," and it takes the form of solving specific problems in forming and curing silicone rubber as they are presented. And, because of past successes by the lab, new problems are presented without letup. Customer visits to the fabrication laboratory used to be about a once a month occurrence. Now customers show up practically every other day.

Since 1946, the laboratory staff has also acquired other responsibilities: evaluating new Silastic stocks; improving methods of fabricating stocks; developing new fabrication techniques; training new sales and engineering personnel; and training outside people in the techniques of handling Silastic in production.

The outside people are usually engineers or foremen connected with large end-users who have decided to make their own silicone rubber parts, or fabricators who are adding Silastic to their line of compounds. Others are taking a "post-graduate course" on the latest techniques worked out by the lab. An example of this is the laboratory-developed HAV unit—a hot-air vulcanizing system that greatly eases the handling and speeds the vulcanization of silicone rubber extrusions.

While many customer problems are routine, occasionally a call for technical advice comes in from someone who knows what he wants in theory but not in practice. A young engineer recently wired in desperation for a precious few inches of a resilient, tubular material which would withstand sterilization and would not react on human body tissue. He wanted it for a "brain valve" he had invented himself in an effort to save the life of his own baby son, then dying of hydrocephalus, or "water on the brain." Turned down regretfully by sources closer to home, he was frantic.

The laboratory dug a coil of the tubing most likely to succeed out of the sample cabinet, cut off a few feet, and sent it out the same day. The boy is alive today, and his engineer-father is now in the "brain valve" business full-time.

Not all problems are solved so quickly, of course. Months or even years of work went into the first Silastic "doughnut" insulator for color TV flyback transformers, the big O-rings for sealing cylinder liners on railroad diesels, and the spark plug boots for automobile engines, company officials point out.

ASTM Proceedings Issued

► American Society of Testing Materials has announced the publication of the 1956 edition of *ASTM Proceedings*, a 1510 page volume which records the accomplishments of the Society during 1956. Included are technical reports and papers with discussions; a summary of the 59th Annual Meeting, held in June, 1956, and the president's annual address by C. H. Fellows, which is entitled "The Challenge of Nuclear Energy Accepted by the Electric Power Industry and ASTM." Also included are reports of 80 technical committees with appendices; 52 technical papers with discussions; symposia published separately as special technical publications and all papers published in the *ASTM Bulletin* during the year, listed by title and author. The 41 technical sessions and eight industry luncheons held at the second Pacific area meeting, in September 1956, are also noted by author and title. The *Proceedings* contain many discussions that have not previously been published. This volume is the official respository for factual information on the activities of the Society. Copies of this book may be obtained from the American Society for Testing Materials, 1916 Race St., Philadelphia 3, Penna., at $12 each.

Offering Technology Book

► The Philadelphia Rubber Group has announced that it has sponsored the second printing of its book on "Basic Rubber Technology." This action was dictated by the fact that an unusually large number of requests for the book were received during recent months. The book is a compilation of fifteen lectures on basic rubber technology which originally constituted the course on the subject sponsored by the group. In addition to thoroughly covering natural rubber and the synthetic rubbers, the book contains chapters on vulcanization, reinforcement, antioxidants and waxes, softeners and plasticizers, extenders and peptizers, testing and testing equipment, processing equipment, factory processing, latices, foam rubber, and basic information on compounding. The group is now in a position to accept orders for the books at $5.00 a copy. Checks should be made payable to the Philadelphia Rubber Group and forwarded to A. J. DiMaggio, Firestone Tire & Rubber Co., Pottstown, Penna.

Builds Urethane Foam Unit

► Witco Chemical Co., New York, N. Y., has announced the erection of a new plant for the production of raw materials for urethane foams. Located at the company's Emulsol Chemical Division plant in Chicago, Ill., the new installation was expected to be in operation by July 1. It will more than double present capacity for Fomrex products, which are sold through the Organic Chemical Division. The new plant will be completely equipped with automatic controls, backed by strict laboratory control to assure a product of consistent quality from batch to batch, the company says.

Coming Events in the Rubber Industry

Aug. 16. Philadelphia Rubber Group, Golf Outing, Manufacturers' Country Club, Philadelphia, Penna.

Sept. 7. Connecticut Rubber Group.

Sept. 11-13. Division of Rubber Chemistry, A.C.S., Fall Meeting, Hotel Commodore, New York, N. Y.

Sept. 23-25. A.S.M.E., Fall Meeting, Hotel Statler, Hartford, Conn.

Sept. 26. Fort Wayne Rubber & Plastics Group, Van Orman Hotel, Fort Wayne, Ind.

Oct. 1. Los Angeles Rubber Group, Biltmore Hotel, Los Angeles, Calif.

Oct. 4. Detroit Rubber & Plastics Group, Detroit-Leland Hotel, Detroit, Mich.

Oct. 4. New York Rubber Group, Henry Hudson Hotel, New York, N. Y.

Oct. 8. Buffalo Rubber Group, Hotel Westbrook, Buffalo, N. Y.

Oct. 11. Chicago Rubber Group, Furniture Club, Chicago, Ill.

Oct. 18. Boston Rubber Group, Fall Meeting, Somerset Hotel, Boston, Mass.

Oct. 24. Southern Ohio Rubber Group, Fall Technical Meeting, Engineers Club, Dayton, Ohio.

Oct. 25. Akron Rubber Group, Fall Meeting, Sheraton-Mayflower Hotel, Akron, Ohio.

Oct. 25. Philadelphia Rubber Group, Poor Richard Club, Philadelphia, Penna.

Nov. 5. Los Angeles Rubber Group, Biltmore Hotel, Los Angeles, Calif.

Nov. 15. Chicago Rubber Group, Furniture Club, Chicago, Ill.

Nov. 15. Connecticut Rubber Group.

Nov. 15-16. Southern Rubber Group, Peabody Hotel, Memphis, Tenn.

Dec. 1-6. A.S.M.E. Annual Meeting, Hotel Statler, New York, N. Y.

Dec. 3. Buffalo Rubber Group, Xmas Party.

Dec. 5. Fort Wayne Rubber & Plastics Group, Van Orman Hotel, Fort Wayne, Ind.

Dec. 6. Detroit Rubber & Plastics Group, Xmas Party, Sheraton-Cadillac Hotel, Detroit, Mich.

Dec. 10-11. Society of the Plastics Industry, Sheeting and Coated Fabrics Division Conference, Commodore Hotel, New York, N.Y.

Dec. 13. Boston Rubber Group, Xmas Party, Somerset Hotel, Boston, Mass.

Dec. 13. New York Rubber Group, Latin Quarter, New York, N. Y.

Dec. 14. Southern Ohio Rubber Group, Winter Meeting, Miami Valley Golf Club, Dayton, Ohio.

Dec. 20. Chicago Rubber Group, Xmas Party, Morrison Hotel, Chicago, Ill.

Jan. 24, 1958. Akron Rubber Group, Sheraton-Mayflower Hotel, Akron, Ohio.

Feb. 13, 1958. Fort Wayne Rubber & Plastics Group, Van Orman Hotel, Fort Wayne, Ind.

Feb. 21-22, 1958. Southern Rubber Group, Houston, Texas.

April 10, 1958. Fort Wayne Rubber & Plastics Group, Van Orman Hotel, Fort Wayne, Ind.

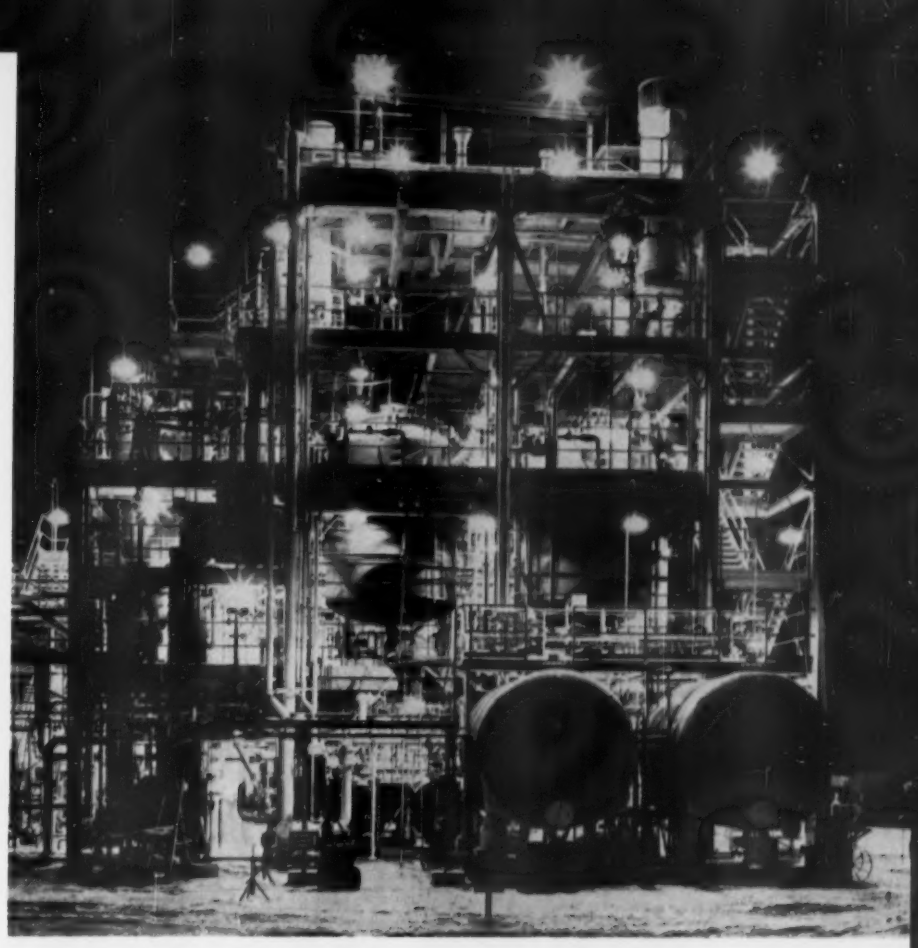
April 11, 1958. Akron Rubber Group, Spring Meeting, Sheraton-Mayflower Hotel, Akron, Ohio.

May 14-16, 1958. Division of Rubber Chemistry, A.C.S., Spring Meeting, Netherlands Plaza Hotel, Cincinnati, Ohio.

June 20, 1958. Akron Rubber Group, Summer Outing, Firestone Country Club, Akron, Ohio.

June 22-28, 1958. A.S.T.M. Annual Meeting, Hotel Statler, Boston Mass.

Sept. 10-12, 1958. Division of Rubber Chemistry, A.C.S., Fall Meeting, Hotel Sherman, Chicago, Ill.



► DuPont's new 15-million pound capacity plant for the manufacture of "Hypalon" synthetic rubber went into production recently at Beaumont, Texas. Known chemically as chlorosulfonated polyethylene, Hypalon is a special purpose rubber that resists ozone and oxidation, the two main enemies of other elastomers. Commercial uses of Hypalon include white sidewalls on tires, tank and hose linings, fabric coatings, and preventive maintenance coatings. With the availability of production from the new plant, DuPont announced a 15 cents-a-pound price reduction effective July 26. Until the new plant went on stream, the synthetic rubber was manufactured on a limited scale at the company's Belle Works near Charleston, West Va.

Firestone President Sees Synthetic Rubber Entering Greatest Period of Growth

► Raymond C. Firestone, president of the Firestone Tire & Rubber Co., said recently that the synthetic rubber industry "is entering its greatest period of growth and will make a favorable impact on the future industrial progress of the United States." Mr. Firestone made the statement in announcing the fulfillment of a $35,000,000 synthetic rubber expansion program at Firestone. The expansion program included the construction of a 40,000 ton butadiene plant at Orange, Texas; the expansion of a synthetic plant at Lake Charles, La., from 100,000 to 190,000 tons capacity a year; and the expansion of Firestone's Akron, Ohio, synthetic plant from 30,000 to 40,000 tons a year. The butadiene plant is the first to be built solely by a rubber company.

"These three plants comprise the most highly integrated synthetic rubber operation ever developed by a single company," Mr. Firestone said. "Since April, 1955, when Firestone acquired the Akron and Lake Charles synthetic plants from the government, we have increased our synthetic production by 77 per cent," he said. Firestone's two synthetic plants had a production capacity of 129,600 in April, 1955. Their present capacity is 230,000 tons.

"This production increase is indicative of the current growth and importance of the synthetic rubber industry," Mr. Firestone said. He pointed out that the markets for synthetic rubber were growing far faster than most other markets. In 1956 approximately 3,000,000 tons of natural and synthetic rubber were produced for world consumption. By 1960 world rubber consumption is expected to increase to 3,600,000 tons annually and by 1965 to 4,400,000 tons a year, approximately 50 per cent more than in 1956. Last year synthetic rubber accounted for 60.9 per cent of the rubber used in the United States.

Mr. Firestone predicted that more and more of the rubber used would be synthetic. He said still more synthetic plants must be built and existing plants must be expanded to meet the future demand. Mr. Firestone said synthetic rubber has achieved its vital standing because of these factors:

(1) Most important, the quality of synthetic rubber has been developed through research to a point where it is now better than natural rubber for many purposes. A great many different types of synthetic are produced by the rubber industry which are adaptable for nearly any purpose for which rubber is used and new uses are being developed.

(2) The supply of natural rubber from all the tropical forests of rubber trees in the world is sufficient to meet only about two-thirds of the world's yearly demand for rubber.

(3) The price of synthetic rubber has remained relatively stable while the price of natural rubber fluctuates and is dependent upon a number of uncontrollable factors, including weather conditions and international situations.

Mr. Firestone said one of the important new products which will use more rubber is air springs. Firestone's new plant in Noblesville, Ind., will be completed within a few months to produce rubber bellows for "Airide" springs in volume. The president of Firestone said Airide springs have great possibilities for application to passenger cars in the near future. "It is reasonably certain that air springs will provide a new and strong market for rubber, both natural and synthetic," Mr. Firestone said.

The future demand for synthetic rubber will depend to some extent upon the development of better and better synthetic, according to Mr. Firestone. "The outlook for Firestone in this regard is highly optimistic," he said. He pointed out that Firestone recently developed an entirely new synthetic rubber which has most of the essential properties of natural rubber.

Firestone made the formula and samples of this rubber available immediately to the government and the rubber industry. He declared heavy duty truck tires made of this new synthetic were tested by U. S. Army ordnance and met or exceeded all military requirements. It was the first time that any synthetic proved completely satisfactory for truck tires, the company president stated.

Acquires Rubarite Patents

► Goodyear Tire and Rubber Co., Akron, Ohio, has acquired the patents and trade marks for "Rubarite," the rubber-mineral powder which is widely used for highway and industrial purposes. The company has established a Rubarite Manufacture and Sales Department and will offer a new line of products for use as additives for the improvement of the qualities of asphalt and tar for road building and industrial applications. The improved bitumen rubberizing materials, which contain 40 per cent, by weight, of unvulcanized synthetic rubber, are said to have superior dispersion and suspension qualities in asphalt and tar to assure maximum improvement in toughness, ductility, flexibility, adhesion and minimum temperature sensitivity.

The new products will be manufactured under the administration of Goodyear's Research Division under the direction of H. A. Endres, manager of rubber and plastic research. Col. Walter F. Winters, formerly chief engineer of Rubarite, Inc., will act as consulting engineer, reporting to Mr. Endres, and will promote Rubarite products in bituminous road construction. Rubarite, Inc., formerly owned by Goodyear in partnership with two other companies, was recently reorganized and is now owned by the National Lead Co.

Rubber Research Reports Issued

► Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., has announced that about 1500 research papers from the government's synthetic rubber program have been released. The papers were prepared by research contractors participating in the synthetic rubber research and development program conducted under the Federal Facilities Corp. and its precedessor agencies. They cover work from July 1, 1949, through April 30, 1955. The collection of papers, on deposit at the Library of Congress is on microfilm or photocopy. Prices for individual reports will be furnished on request by the Library of Congress, Photoduplication Service, Publication Board Project, Washington 25. All inquiries should refer to PB 126248. An index to the reports is also available from the Library. It is priced at $11.10 for microfilm copy and $82.80 for enlargement print. The newly released collection supplements about 4000 other papers on the copolymer project, which were released previously. The Library will also quote prices on the earlier reports.

Release Liner Developed

► A new type of release paper has been developed by Fasson Products, Painesville, Ohio, for manufacturers and packagers of very sticky materials. Fasson "Release Liner" is said to resist adhesion even by extra high tack materials such as synthetic and natural rubbers, asphalts and tars, gums and pressure sensitive adhesives. The material was originally developed by the company for its own exceptionally high tack adhesive, but is now being promoted as a separate product.

Three Boranes Available

► Callery Chemical Co., Callery, Penna., has announced that three new amine boranes are now available in research quantities. The boranes, dimethylamine-borane, $(CH_3)_2NH{:}BH_3$; trimethylamine-borane, $(CH_3)_3N{:}BH_3$; and pyridine-borane, $C_5H_5N{:}BH_3$, are expected to be available at moderate cost in the future due to the manufacture of related chemicals for bulk uses. Preparation of higher molecular weight amine-boranes for special uses is also practicable, according to the company. The utilization of these boranes as selective reducing agents in non-aqueous solvents has been of most interest, the company says. They are polymerization catalysts and inhibitors for acrylates and vinyl compounds. In addition, applications as antioxidants and stabilizing agents have been suggested as promising possibilities.

Offers New Plasticizer

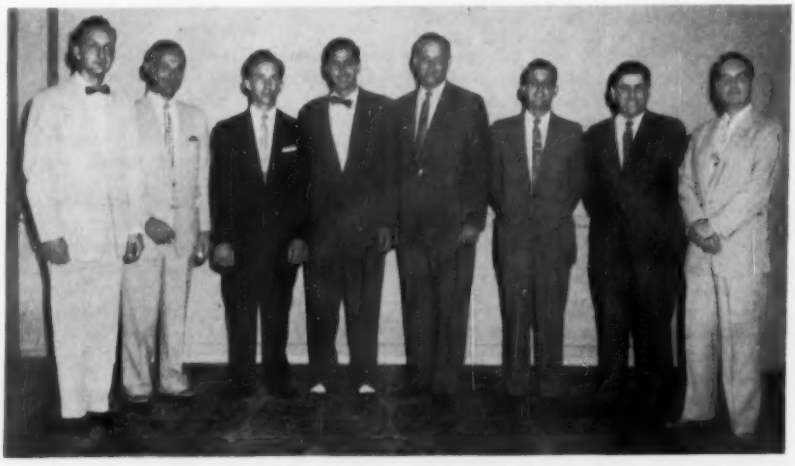
► "Latex Plasticizer A-12", an anionic emulsion developed as a modifier and extender for both curing and non-curing latex systems, has been introduced by Pennsylvania Industrial Chemical Corp., Clairton, Penna. The material, which is compatible with natural rubber, neoprene, styrene-butadiene, styrene-acrylonitrile and acrylic latices, exhibits good softening and plasticizing properties. It also has good aging characteristics and resistance to water and alkalies, according to the company. The product may be used in back sizing of decorative fabrics and carpeting; back filling of bagging, tag, book clothes, etc.; adhesives, tie coats, laminates and in resin plasticizing.

Japanese Rubber Unit Planned

► Japanese Geon Co., a chemical company in Tokyo, Japan, has announced that the production of 8,500 tons of synthetic rubber annually, will begin in 1959. The company's plan for technical cooperation with the B. F. Goodrich Co. for the production of synthetic rubber has been approved by the Foreign Investment Council of the Finance Ministry. Synthetic rubber production will include acrylonitrile fiber high styrene rubber and latex as well as some special types of GR-S. A new plant will be built in Kawasaki near Tokyo where the company will obtain butadiene from the Japan Petro-Chemical Co. Construction of the plant is scheduled to be completed by the end of 1958. The company plans to increase synthetic rubber production to 15,000 tons in the second stage of its program. A semi-official synthetic rubber company will also be established by the Japanese Government in conjunction with rubber manufacturers. Production is scheduled to begin in 1959 with the production of 30 thousand tons of GR-S and latex foam and should reach 45 thousand tons by 1962.

General Cable Acquires Firm

► Stockholders of the Metal Textile Corp., New York, N. Y., have approved the transfer of the assets of the company, subject to liabilities, to a subsidiary of the General Cable Corp., New York, N. Y. Under the plan, there will be a distribution of four-ninths of a share of General Cable common in exchange for each share of Metal Textile common. The dissolution of Metal Textile became effective on July 10.



Newly Elected Officers of the Southern Rubber Group

► Shown above are the newly elected officers and directors of the Southern Rubber Group who will take office on November 1. Elected at the recent meeting of the group in Atlanta, Ga., the new officials will run the meeting to be held in Memphis, Tenn., on November 15 and 16. From left to right, are: John Galloway (DuPont), director; Albert Koper (Harwick Standard), director; Warren Hall (Phillips Chemical), vice-chairman; Tom Brown (Goodrich), chairman; John Bolt (Naugatuck Chemical), immediate past-chairman; Roger Pfau (C. P. Hall), secretary; Monroe Mirsky (Guiberson) treasurer, and R. W. Rice (Firestone), director. Robert D. Baker (General Tire), director, was not present at the meeting.

Collyer Sees Ample Supplies of New Rubber in 1957

► World supplies of new rubber are more than ample to meet requirements in 1957 and for the next several years, according to John L. Collyer, chairman of the board of the B. F. Goodrich Co. In the first six months of 1957, world consumption of new rubber was at an annual rate of 3,120,000 long tons compared to a minimum productive capacity of 3,500,000 long tons a year of new rubber, Mr. Collyer said.

"There is man-made rubber capacity now in being to supply both our domestic needs and further increases in new rubber consumption in other free nations. Free world consumption of man-made rubber is currently at an annual rate of 1,260,000 tons but at mid-1957 this nation alone could produce 1,520,000 long tons of the man-made rubbers yearly, if needed. This represents an expansion in production capacity of about 50 per cent in the past two years, and industry plans call for continued expansion in the future. Man-made rubber plants are also under construction in certain of the larger nations in Western Europe.

"The strong demand for man-made rubber has exceeded even the most optimistic estimates. The free nations of the world increased their combined consumption of man-made rubber in the first half of 1957 by nine per cent over the previous year. Consumption of man-made rubbers in free nations outside of the United States has again increased sharply this year, and for the full year is expected to be double the 1955 total," the Goodrich executive said.

"This year, the world has consumed natural rubber at an annual rate of about 1,865,000 long tons, compared with actual world production of 1,887,500 long tons in 1956, and 1,912,500 tons in 1955. Consumption of new rubber in the United States for the year 1957 is estimated at 1,490,000 long tons, up slightly from the previous year but still short of the 1955 record. The versatile man-made rubbers now account for almost 63 per cent of our domestic new rubber needs, and this proportion has been rising steadily," he concluded.

Tyer Acquires Plastimold

► Tyer Rubber Co., Andover, Mass., has acquired control of Plastimold, Inc., Middleport, N. Y. by an exchange of common stock. According to Wallace E. Brimer, president of Tyer, the present operating management of the company will continue. Sydney Porter is vice-president of manufacturing and development and Edward H. Goddard, superintendent and plant engineer. Other general officers of Plastimold are Wallace E. Brimer, president and treasurer; Frank J. Emmett (vice-president, sales, Tyer), first vice-president, marketing; Alan L. Skaith and Eric Dent, vice-presidents and Gaynor K. Rutherford, secretary. Philip L. Maclean, who has had about eighteen years of experience with Tyer in industrial engineering, production control and sales, has been named resident manager.

Seen left to right, are: Dr. David Craig; Eugene Bertozzi, Thiokol Section Head; Dr. E. M. Fettes; Dr. B. C. Barton and Dr. Walter Nudenberg of the Texas-U. S. Chemical Corp.

Thiokol Technical Club Hears Craig on Vulcanization

► The June 18th meeting of the Thiokol Technical Club held at the headquarters of the Thiokol Chemical Corp. in Trenton, N. J., attracted an audience of over 200 persons. Principal speaker at the meeting was Dr. David Craig of the Research Center, B. F. Goodrich Co., who spoke on the subject, "Vulcanization". Dr. E. M. Fettes, manager of research and development for Thiokol Chemical, introduced the speaker.

Dr. Craig spoke of vulcanization as a two-step process, stating that vulcanization is a process consisting of a crosslinkage reaction and a degradation or reversion reaction. Even in the initial stages of vulcanization, the speaker declared, the reversion step occurs, contrary to accepted views.

Dr. Craig interpreted the vulcanization process in terms of these fundamental competitive reactions, explaining schematically his own version of the occurrence of the changes.

Labor Notes

► Goodyear Tire & Rubber Co. and the United Rubber Workers, AFL-CIO, reached agreement on a 15c hourly package pay boost on July 22, two hours prior to a strike deadline. The pay package consisted of a 14½c an hour across-the-board increase. In addition, the union and the company agreed on a ½c an hour increase in a night turn bonus in six of the 11 plants covered by the agreement. The agreement was negotiated under a wage reopener clause of the contract between the company and the union that expires April 15, 1958.

The pay increase won by URW was one of the largest since the end of World War II and is expected to set a pattern for the industry. It covers 24,000 employees, including 12,000 in plants in Akron. In 1955, the URW won a basic pay boost of 12c an hour, plus fringe benefits estimated at 4c hourly. Following the signing of the contract with Goodyear, URW also signed with Firestone, U. S. Rubber and Goodrich. Last year, URW won a 6.2c an hour basic pay boost, plus a supplemental unemployment benefits plan, involving initial contributions of 3c hourly per employee.

► The National Labor Relations Board has dismissed unfair labor charges against the strike-bound O'Sullivan Rubber Corp. of Winchester, Va., filed by the URW. The NLRB director hearing the case stated that there was insufficient evidence to uphold the charges against the company. Local 511 of the URW accused the company of failing to bargain in good faith. The union went on strike on May 13, 1956, to back up wage demands in a new contract. Dismissal of the charges paved the way for the NLRB to consider a petition by O'Sullivan and some of its nonstriking employees for a new collective bargaining election. A hearing on the election petition was to have been held on August 2.

The company seeks to invoke a section of the Taft-Hartley law that permits a new certification election after a union has been bargaining agent for a year. Because the URW local is on strike, some 300 union employees will not be able to vote in the election, according to URW officials. Voting instead, the union has charged, will be strikebreakers hired by the company with the aid of Virginia's right to work law. O'Sullivan employees originally voted 343 to 2 to join the URW. They voted 355 to 2 to strike. Few, if any of these employees, according to the union, will be able to vote in the election, if it is granted.

ASTM Administrative Committee Acts Upon Proposed New Tentatives

► The Administrative Committee on Standards of the American Society for Testing Materials is empowered to pass upon proposed new tentatives offered between annual meetings of the society. On the dates indicated below the Standards Committee took the following actions on tentatives proposed by Committee D-11 on Rubber and Rubberlike Materials:

Tentative Method for Strain Testing of Vulcanized Rubber (D 1457-57T) (Approved Jan. 31, 1957)

New Tentative.—This method, used in industry for several years, describes a procedure for determining the strain of soft vulcanized rubber compounds under a specified stress. The strain is measured after the load has been suspended from the specimen for a specified period of time.

Tentative Method of Test for Change in Length of an Elastomeric Vulcanizate Resulting from Immersion in a Liquid (D 1460-57T) (Approved March 6, 1957)

New Tentative.— This method was developed by Committee D-11 to replace the former Method B of Tentative Methods of Test for Change in Properties of Elastomeric Vulcanizates Resulting from Immersion in Liquids (D 471-55T). It is designed to give limited information regarding the effect of immersion by observing the change in length of the specimen through the transparent wall of the container. Although it may be employed with any liquid, it is especially applicable to liquids that are so volatile that they must be maintained under pressure during the period of immersion.

Tentative Methods of Test for Change in Properties of Elastomeric Vulcanizates Resulting from Immersion in Liquids (D 471-55T) (Approved March 6, 1957)

Revision.—Method B is eliminated and replaced by the new and separate method D 1460, (See immediately above).

Tentative Specifications for Elastomer Compounds for Automotive Applications (D 735-55T) (Approved March 6, 1957)

Revision.—The SAE-ASTM Technical Committee on Automotive Rubber, in its test work, found that when compounds were made from silicone gum, certain properties in the tables could not be met consistently. On the basis of round-robin tests the committee recommended changing in Table V grade TA-706 elongation requirements from 150 to 125 per cent and volume change from 0 to 20 per cent to 0 to 15 per cent.

Tentative Methods of Dynamic Testing for Ply Separation and Cracking of Rubber Products (D 430-51T) (Approved Jan. 31, 1957)

Revision.—These revisions were recommended to bring the methods more in line with current practice.

Tentative Methods of Testing Compressed Asbestos Sheet Packing (D 733-53T) (Approved Jan. 31, 1957)

Revision.—The purpose of this revision is to eliminate some internal inconsistencies and also to make the method more suitable for cross-reference required by the Specifications for Nonmetallic Gasket Materials for General Automotive and Aeronautical Purposes (D 1170).

Tentative Methods of Testing Rubber-Coated Fabrics (D 751-52T) (Approved Jan. 31, 1957)

Revision.—As a result of experience in the use of these methods, the sections dealing with Weight, Hydrostatic Resistance, and Testing Machine have been clarified.

Tentative Method of Test for Resistance of Vulcanized Rubber or Synthetic Elastomers to Crack Growth (D 813-52T) (Approved Jan. 31, 1957)

Revision.—This method has been revised to bring it in line with current practice.

Tentative Specifications and Methods of Test for Concentrated, Ammonia Preserved, Creamed and Centrifuged Natural Rubber Latex (D 1076-54T) (Approved Jan. 31, 1957)

Revision.—The revision consists of the addition of methods for the determination of volatile fatty acids and KOH number, addition of tables for low ammonia latex with other preservatives, and a revision of scope.

Standard Method of Test for Weather Resistance Exposure of Automotive Rubber Compounds (D 1171-55) (Approved Feb. 18, 1957)

Revision and reversion to tentative.—To this method has been added an additional method of rating samples exposed to weather by providing for a quality retention rating value.

William R. Todd

Named Division President

► William R. Todd, formerly vice-president of the Sponge Rubber Products Division of the B. F. Goodrich Co., has been named president succeeding F. M. Daley, whose retirement became effective on August 1. Mr. Todd has been vice-president of the division since it was founded as an independent company in Shelton, Conn., 34 years ago. In addition to his new position as president of the division, Mr. Todd is vice-president and chairman of the executive committee of Griffin Hospital in Derby; director and vice-president of the Hewitt Memorial Home in Shelton and a director and member of the executive committee of the Bridgeport National Bank. Mr. Daley, a graduate of Dartmouth College, founded the present Shelton Products Division of the B. F. Goodrich Co. as the Sponge Rubber Products Co. in January, 1923, with Mr. Todd and two other associates. Sponge Rubber Products Co. became a division of Goodrich in August, 1954.

Two New Silicone Rubbers

► Dow Corning Corp., Midland, Mich., has announced the development of two new silicone rubbers, "Silastic 6535" and "Silastic 2071", for service at temperatures in the range of 600°F. Both are primarily cloth-coating stocks said to have excellent bond strength, low compression set and resistance to reversion under clamps. Silastic 6535 is a liquid dispersion, shipped ready for solution-coating on glass cloth. Vulcanized, it is one of the most temperature stable elastomers known, retaining resilience from 600°F. down to a brittle point of –178°F., the company says. Silastic 2071 has been designed for calendering and is also suitable for molding or extruding. The product is easily processed, its typical properties after 24 hours in a circulating air oven at 600°F. including a Shore A Scale hardness rating of 63, a tensile strength of 770 psi and 200% elongation. Both stocks are currently available in commercial quantities.

DeLuxe Super Champion Tire

► Firestone Tire & Rubber Co., Akron, Ohio, has announced the addition of a high performance, low-priced tire to its passenger car line. "DeLuxe Super Champion," a replacement tire, will make its debut as the first low-priced tire designed for high horsepower cars and turnpike driving. Engineers incorporated the basic principles of race-type construction with improved compounding to develop the tire line. Designers call their new manufacturing technique a "speedway weld." First, a heat resistant tread compound is used to reduce oxidation and deterioration. As a result, the DeLuxe Super Champion is eight times stronger in resistance to tread separation, company officials state. The fourth ply is beefed up with a newly discovered synthetic rubber. The new stock has high adhesion qualities. A layer of high adhesion stock is added between the fourth ply and tread to eliminate separation. Appearance of the new tire line is designed to give cars the modern low look. The white sidewall is narrower and is protected against curb scuffing by a heavy rubber bumper. Engineers rate the tire on a par with original equipment tires in both performance and appearance. The new tire line is available in all popular sizes.

Named Research Director

► Dr. Thomas Harrison Davies has been appointed director of research at the Mellon Institute, Pittsburgh, Penna. Formerly administrative head of the Multiple Fellowship sustained in the Institute since 1952 by the Pittsburgh Plate Glass Co., Dr. Davies has had a distinguished career in scientific research and management. Born in Baltimore, Md., Dr. Davies attended Johns Hopkins University, receiving his A. B. in 1935 and his Ph. D. in 1938. Previous to joining Mellon Institute, he was an associate professor in the Institute for Nuclear Studies in the Department of Chemistry and in the Institute of Radiobiology and Biophysics at the University of Chicago. In his work at Mellon Institute, Dr. Davies has developed a scientific research program on problems of structure, surface chemistry and the solid-state physics of glass.

Custom Preparation Service

► A new custom preparation service for confidential formulation of made-to-order specialty resins and polymers in bulk, suspension, solution or emulsion form, has been offered the by Monomer-Polymer Laboratories of the Chemical Division of the Borden Co. According to Borden, complete laboratory and pilot plant facilities permit handling of all customer production requirements, including composition, viscosity, solids content and other individual specifications. Block and graft polymers and polyelectrolytes such as methacrylic acid/vinyl pyridine copolymers are part of the service. Monomer-Polymer technical personnel are said to be particularly skilled and experienced in the preparation of substituted styrene, allyl and diallyl ester, acrylate and methacrylate and vinyl ester copolymer systems.

To Sell in Puerto Rico

► Dayton Rubber Co., Dayton, Ohio, has announced completion of negotiations for marketing its multiple lines of automotive and industrial products throughout the island of Puerto Rico. The Porto Rico Oil Co. has been appointed exclusive distributor for all Dayton Rubber products, including tires and tubes and industrial power transmission belts, for all Puerto Rico and the Virgin Islands. Candido Garcia, president of the Porto Rico firm, recently spent two weeks in Dayton becoming acquainted with the company's manufacturing facilities and discussing long range marketing plans with Dayton Rubber sales officials. Dayton Rubber spokesmen emphasized that in making its broad lines of products available in Puerto Rico, the company is simply carrying out a program from broadening its world markets, and that there are no plans for establishing manufacturing facilities on the Island in the foreseeable future.

Open Compound Mixing Unit

► Geauga Industries Co., Middlefield, Ohio, has completed a half-million dollar rubber mixing plant for custom extrusion and molding. The new two-story 20,000 square foot addition has been designed for high efficiency linear flow of raw materials from receiving through the internal rubber mixer at a rate of 4500 pounds per hour. The second major addition to the Middlefield plant in less than one year, the new unit gives the company a mixing capacity of 2,000,000 pounds per month and can be adapted to vinyl compounding as well as natural and synthetic rubber, company officials say. By employing mechanized weighing of compounding agents, the company is able to adhere closely to laboratory set specifications for maximum quality as well as efficiency.

Develops New Jet Tire

► B. F. Goodrich Aviation Products, Akron, Ohio, has developed a new jet aircraft tire, said to be cooler running and able to survive up to three times as many high-speed take-offs and landings than conventional tires designed for use on jet planes. The improved performance of the new tire is due to a ventilated tread design called "Sinewave" which is effective under extreme loads, on take-offs and landings at speeds above 200 miles per hour, the company says. The Sinewave tread pattern allows heat to flow uniformly from the tire while grooves between the ribs circulate cooling air to eliminate formation of localized "hot spots". The new pattern also permits equal distribution of tread rubber in tires designed for modern jet aircraft. To obtain improved resistance to tread cutting and actual penetration into the tire, the Sinewave tread is reinforced with multiple plies of nylon cord. Action of the cord resembles a floating shield immersed in the rubber tread to repel both sharp and blunt objects and assist in preventing tread separation. Measuring 6.6 with 14-ply rating, the Sinewave tread tire, now in use on the Lockheed F-104 series, is about the same size as a passenger tire but carries approximately 10 times the load and is inflated to 175 pounds per square inch.

Thiokol Describes Butyl Tests

► Thiokol Chemical Corp., 780 N. Clinton Ave., Trenton, N. J., has issued Parts II and III, *Bulletins 100-1 and 100-2*, respectively, on their studies of sulfur-type accelerators for butyl rubber of the thiuram and carbamate types. The bulletins describe tests given, the purpose of the tests, the accelerators tested, the procedure and materials used and the conclusions arrived at.

Newly Formed Mercury Molding Machinery Opens Plant

► Mercury Industries, Inc. of Hillsdale N. J. has announced the formation of a new corporation called Mercury Molding Machinery, Inc. The new firm will specialize in the manufacture of machinery specifically designed for the molding of vinyl plastisols and other related plastics. Mercury Molding Machinery will be staffed with personnel experienced in finding solutions to plastisol molding problems. A production layout of molding machinery and auxiliary equipment will be on demonstration display.

Mercury Industries, Inc., pioneers in the design and manufacture of vinyl plastisol molding equipment, will continue to manufacture at their factory in Hillsdale, the various items of auxiliary equipment which find extensive use in the vinyl plastisol molding industry.

Develops New Anti-Adhesives

► Two new "AB-hesive" or anti-adhesive silicone treatments for paper and paperboard have been developed by Dow Corning Corp., Midland, Mich. Designated "Dow Corning 22" and "Dow Corning 23," the materials are said to impart the highest order of surface resistance to tacky or sticky materials ever developed. A water emulsion and a solvent solution, respectively, Dow Corning 22 and 23 may be applied with conventional equipment to a wide range of paper and paper-like materials, including kraft, parchment, glassine and cellophane. The concentration of silicone may be varied easily to suit the paper being treated, the company says. Curing schedules range for 10 seconds at 350°F. to two minutes at 235°F. After curing, the silicone treatments are said to exhibit full "release" characteristics immediately and retain them for the life of the paper stock. Non-migrating and non-contaminating when cured, they have no effect on untreated papers, when packaged in roll form, or on materials with which they come in contact, according to the company. Dow Corning claims that neither of these anti-adhesives effects any change in the appearance, odor or handling properties of paper stock. Both impart a notable degree of water repellency.

Picco Develops New Emulsion

► Pennsylvania Industrial Chemical Corp., Clairton, Penna., has developed a new additon to the company's series of hydrocarbon emulsions, called "Piccopale Emulsion A-22". Developed in response to demand for an anionic emulsion exhibiting superior stability in low pH systems, the new product is said to have a high melting point of the emulsion solids with wide pH stability. According to the company the emulsion demonstrates excellent compatibility with polyvinyl acetate acrylic resin emulsions, neoprene and styrene-butadiene. Features of the new product are its pigment binding properties, soil removal at high volumes, resistance to soap, water, acids and alkalis, compatibility with thickeners and protective colloids, retained flexibility, good adhesion packaging and mechanical stability, uniform particle size, reduced formulating costs and reduced can corrosion, the company says.

Underwrites $550,000 Issue

► According to current reports, an investment banking firm in Columbus, Ohio, has underwritten a $550,000 issue of the Central Rubber & Steel Corp., Findlay, Ohio, covering 15-year 6 per cent sinking fund debentures. It is reported that the debentures are being offered to Ohio residents only. Central Rubber will use the proceeds to purchase shares of the company's stock now owned by the estate of the late business partner of S. W. Weiger, president of Central Rubber. The corporation, formed in 1926 as Central Rubber Reclaiming Co., was consolidated in 1943 with Bluffton Mfg. Co., manufacturers of washing machines. The company supplies reclaimed rubber and rubber and plastic compounds to the trade.

Financial Report

► One week after Firestone recently reported sales of $550,422,328 and profits of $28,430,380 for the first six months of its fiscal year, a statement for the company's first four months of business was discovered in the vault of the general accounting office here. The single sheet of heavy ruled paper was inscribed at the top in a strong, modified Spencerian hand: "Condition to Nov. 30, 1900". The first entry was sales, $25,588; the last, profits, $3.74.

Completes Avon Lake Unit

► B. F. Goodrich Chemical Co., Cleveland, Ohio, has announced completion of what is said to be one of the nation's largest centers for synthetic rubber and rubber chemicals development at the Avon Lake (Ohio) Experimental Station. The $1,500,000 development center will be engaged in the improvement of the company's existing raw material products and the development of new products sold as Hycar American rubber and Good-rite chemicals, rubber chemicals and resins. Employing approximately 100 people, the new center provides large, well equipped processing and laboratory areas, Goodrich says. A company spokesman said that the expanded facilities and improved technical interchange with other groups at Avon Lake, forecasts an even more effective development program in the future. E. W. Harrington will be in charge of the new development center and will report to Anton Vittone, plant manager of the Avon Lake Experimental Station.

Considers Raising $15 Million

► General Tire & Rubber Co., Akron, Ohio, "is thinking of raising $15 million to $20 million within the next several months" according to M. G. O'Neil, vice-president. This is in addition to $7,500,000 recently acquired by Aerojet-General which is 87.6% owned by General through a stock offering. According to current reports, Mr. O'Neil said the money might be raised by a subordinated debenture issue, perhaps with a stock warrant provision permitting conversion into common stock.

Company Name Changed

► Manhattan Paste & Glue Co., Inc., Brooklyn, N. Y., has announced that the company name has been changed to Manhattan Adhesives Corp. The change was made to conform with the broadening of the company's line of adhesives. The line was recently extended to include the manufacture of polyvinyl acetate emulsion. Other types of adhesives produced by the company are those made from latices and rubber, resins of various kinds, gums, casein, animal glue or technical gelatine, starch, dextrines and others.

Conducts Rim Education Schools

► Metal Products Division of the Goodyear Tire & Rubber Co., Akron, Ohio, has announced that it is conducting a series of rim education schools to familiarize tire dealers and large equipment owners throughout the United States and part of Canada with the latest techniques in servicing large earthmover tires and rims. Sponsored by local distributors, the schools are conducted by Goodyear rim engineers. The Metal Products Division has three schools in simultaneous operation in the eastern, central and western sections of the country. Large two-ton, van-type trucks, specially adapted for the program, transport training materials from city to city. Actual field equipment is used, whenever possible, for demonstration purposes. Techniques dealing with the mounting and dismounting of earthmover tubeless tires from tubeless rims are demonstrated during the session. Service and maintenance of equipment are also discussed and the latest methods of trouble shooting and field correction explained. A portion of the training school is devoted to an explanation of the new federal highway program and how it will affect those who sell and service heavy equipment that is expected to be used in the program.

Building Silicone Unit

► Dow Corning Corp., Midland, Mich., is building a new plant for the manufacture of silicone consumer products and establishing a Silicone Specialties Division as a separate operating unit. This move will consolidate the division's manufacturing in a location which permits more efficient operation and provides room for diversification and expansion. The new building, to be erected on a six acre tract to provide room for parking and expansion, will occupy about 35,000 square feet. When completed by late summer, the manufacturing operations will initially employ about thirty persons. Products to be manufactured in the Silicone Specialties Division plant include Sight Savers, silicone treated tissues for cleaning eyeglasses, Shoe Savers, for preserving and protecting leather from rain and snow and Dow Corning 4X compound for lubricating automobile gasketing rubber and for insulating and sealing ignition systems from moisture.

Retread Plant In Production

► Goodyear Tire & Rubber Co. at Des Moines, Iowa, has announced that a new retread and repair plant, under the management of V. C. Lemmons, is now in full operation. The plant is considered one of the most modern and completely equipped facilities of its kind in the country. Retreaded tires in all sizes from 6.40 x 15 passenger to 37.5 x 33 earthmover types are produced. The range includes retreads for tractors, planters, combines, trucks and other farm equipment in addition to passenger car, truck and off-the-road vehicles. The Goodyear facility, a one-story, steel-framed structure of cement block, is 240 feet long, 120 feet wide and has a floor area of 28,000 square feet.

Offers New Education Program

► Establishment of a new program of aid-to-education has been announced by the Goodyear Tire & Rubber Co., Akron Ohio and Goodyear Foundation, Inc. The program includes scholarships, fellowships and grants amounting to $170,000 payable to the nation's universities, colleges and technological institutions during the 1957-1958 school year. The educational program was adopted recently by the trustees of Goodyear Foundation, Inc., a non-profit charitable institution organized in 1945.

First phase of the four-point program consists of scholarships with accompanying grants-in-aid to the participating schools. The Foundation will award 13 technical and four non-technical one-year scholarships to assist deserving young men in their junior or senior years of college to acquire undergraduate degrees. Second phase of the Foundation's aid-to-education program calls for unrestricted grants-in-aid totaling approximately $60,000 including grants to state foundations of independent colleges where Goodyear has manufacturing operations. Another point in the plan, consists of four fellowships with accompanying grants-in-aid to the participating schools. The fellowships will be in the fields of Rubber Chemistry, Industrial Economics, Aeronautical Engineering and Advanced Highway Engineering. Final phase of the program provides for restricted grants-in-aid to two specified universities in the fields of education and economics. This program is separate and distinct from the 1956 Goodyear aid-to-education program designed to stimulate interest and encourage greater participation in scientific careers.

Sponsors Safety Workshop

► Manufacturing Chemists' Association will sponsor a Chemical Industry Safety Workshop, to be held in Philadelphia, Penna., on September 20. Members of the MCA General Safety Committee will discuss mutual and individual problems with plant safety officials of the Greater Delaware area. The Workshop, the first of its particular kind, is a part of a continuing program formulated by the committee. MCA received awards in 1956 for its safety activities from the American Society of Safety Executives and the National Safety Council. George L. Gorbell of Monsanto Chemical Co., St. Louis, Mo., is chairman of the General Safety Committee for MCA.

Resigns From W. R. Grace

► Hugh S. Ferguson has resigned as an executive vice-president of W. R. Grace & Co. Mr. Ferguson will continue as a director and in an advisory capacity, devoting time to the company's chemical and other industrial activities. He will make his headquarters in Greater Boston. Mr. Ferguson was president of Dewey and Almy Chemical Co. at the time of its merger with W. R. Grace & Co. in 1954. The following year, he became executive vice-president in charge of the chemical subsidiaries.

Annual Rubber Age Award Goes to Vernon Allen

Vernon R. Allen

► The annual prize of $100 for the student who prepares the best term paper or the best thesis for his degree in rubber chemistry has been presented by RUBBER AGE to Vernon R. Allen at the University of Akron. Mr. Allen received the award for submitting the best master's thesis in the University's Chemistry Department in 1957. Mr. Allen, a member of the staff of the Institute of Rubber Research at Akron University, received his master's degree at commencement exercises at the University on June 10. He received his bachelor's degree at Tennessee Polytechnic Institute. Mr. Allen's master's thesis was entitled, "Vulcanization of Polychloroprene With Primary and Secondary Amines." He plans to continue study at the University toward his Ph. D. in chemistry.

Names Sales Representatives

► Tracerlab, Inc., Waltham, Mass., has announced the appointment of Joseph P. Beyer and Charles B. Mead as sales representatives. Mr. Beyer, whose headquarters will be located in Los Angeles, will cover southern California, Arizona, New Mexico, southern Nevada, Montana, Wyoming, eastern Idaho, Utah and El Paso, Texas. A graduate of Menlo College, Menlo Park, Calif., Mr. Beyer served with the U. S. Marines as a sergeant from 1943 to 1946 and from 1950 to 1951. To cover Michigan, Ohio and eastern Kentucky, Mr. Mead's offices will be located in Detroit, Mich. Mr. Mead is a graduate of Siena College in Loudonville, N. Y.

Appointed Vice-President

► Anaconda Wire & Cable Co., New York, N. Y., has announced the appointment of L. F. Hickernell as vice-president of engineering. Mr. Hickernell, chief engineer of Anaconda since 1933, will be succeeded in that post by Leonard L. Carter, formerly assistant chief engineer. Henry V. Van Valkenburg has been named general sales manager.

To Standardize Terminology

► The American Standards Association has undertaken a project to establish standard terms pertaining to automatic control and to develop definitions of such terms. A committee, Sectional Committee C-85, entitled "Terminology for Automatic Controls," has been formed under ASA procedure to handle this project. The committee will handle "Terminology pertaining to systems such as: automatic process control, feedback control, regulating and other related systems not requiring human intervention as part of the regulating procedure," according to a recent report. Committee officers are: chairman, M. A. Princi (General Electric), and secretary, G. W. Heumann (General Electric). As an initial step in organizing its work, C-85 has set up several subcommittees. Subcommittee 1 will handle "Types and Components"; Subcommittee 2, "Signals"; Subcommittee 3, "Modes and Parameters," and Subcommittee 4, "Behavior and Presentation." A Coordinating Committee has also been established to resolve questions of concept, procedure and style as they affect all subcommittees and will serve as an editorial committee to draft the tentative Standard which will contain the definitions developed by the subcommittees. Initial phase of the work of C-85 is expected to be completed this year.

Offers New Reclaiming Oil

► Industrial Chemicals Division of Olin Mathieson Chemical Corp., Baltimore, Md., has introduced a new rubber reclaiming oil which is said to produce finished reclaim with higher tensile strength and lighter color than is obtained with other reclaiming oils on the market. Designated "Bunac KS Rubber Reclaiming Oil," the product is suitable for use in both the pan and digester reclaiming processes and is designed to replace solid rosin in both processes. The company claims that in the pan process, Bunac KS Rubber Reclaiming Oil disperses better through the ground rubber than solid rosin and also has less tendency to coalesce during the heating process. The material is said to give a finished reclaim with properties comparable to those obtained with solid rosin, with the exception of the higher tensile strength and lighter color. Bunac KS Rubber Reclaiming Oil is offered in 55 gallon steel drums and in tank cars.

Joins European Trading Firm

► G. B. Oks, formerly associated with E. I. du Pont de Nemours & Co., has accepted an appointment by Societé Anonyme Francaise Pour L'Importation du Caoutchouc-Alcan & Cie., Paris, France, to create a Chemicals and Synthetic Rubbers Department at the organization's newly formed British associate company, Hecht, Levis and Alcan, Ltd., London, England. Hecht, Levis and Alcan, Ltd., is a rubber trading company which is carrying on the business formerly conducted by Hecht, Levis and Kahn, Ltd. The latter firm functions solely as the holding company for the international Hecht, Levis and Kahn group.

Names in the News

Myron S. Kem, comptroller and assistant secretary of the Dayton Rubber Co., Dayton, Ohio, has been elected to membership in the Controllers Institute of America.

Herman Muehlstein, president of H. Muehlstein & Co., Inc., has been named chairman of the Rubber Division in the current campaign of the Greater New York Fund.

O. W. Anderson has been named sales manager of the Paranite Wire & Cable Division of the Essex Wire Corp., succeeding J. J. Madden, who has retired.

William S. Richardson, president of the B. F. Goodrich Co., was awarded the honorary degree of Doctor of Laws at the spring commencement of the Alabama Institute, Auburn, Ala.

Raymond F. Allen, formerly vice-president of sales at Stansteel Corp., has been appointed vice-president and director of marketing and sales for the Thermoid Co.

Charles M. Scholz, Jr. has been named general sales manager for Landers Corp. succeeding James L. Davison, who has been promoted to the newly created post of director of sales planning and market analysis.

Paul Beebe, Sr., who is in charge of foreign operations compounding for the Goodyear Tire & Rubber Co., has been presented with a diamond studded service pin in recognition of forty years of continuous service with the company.

Oscar B. Schier, II, has been designated secretary-elect of the American Society of Mechanical Engineers, by unanimous vote of the Society's Council, succeeding Clarence E. Davies, who retires after 23 years of service.

Frederick T. Hopkins, formerly assistant sales manager of industrial yarns and fabrics, has been appointed sales manager of industrial yarns and fabrics for the Textile Division of the U. S. Rubber Co. succeeding Albert W. Hansen, who has retired.

E. A. Olander has been promoted to manager of merchandise and materials control at the Lincoln, Neb. plant of the Goodyear Tire and Rubber Co. succeeding R. G. Olds, who has been transferred to the firm's Los Angeles plant. J. E. Law succeeds Mr. Olander at Lincoln as manager of industrial products merchandise distribution.

E. B. Jared, formerly associated with the Industrial Products Division of the B. F. Goodrich Co., has been named sales manager of the Adhesives and Sealers Division of the Daubert Chemical Co.

Wilbur K. Tattersall, associated with Wellington Sears since 1937, has been appointed manager of the Grey Goods Department, succeeding James A. Horne, who recently retired as manager of the department and vice-president.

Dr. Ernest I. Becker, professor of Organic Chemistry at the Polytechnic Institute of Brooklyn, has been elected chairman of the New York chapter of the American Institute of Chemists.

Bruce R. Laumeister, who joined Bakelite in June, 1956 as a technical trainee, has been named technical representative for the Extrusion Materials Division in the Philadelphia district office.

Jess W. Meherg and John P. Urbon, two technical development men for the Goodyear Tire & Rubber Co., have been presented with the Dinsmore Merit Award for outstanding achievement in 1956.

James N. Landis, a San Francisco engineering executive, has been nominated president of the American Society of Mechanical Engineers.

R. J. Thomas, vice-president and treasurer of the Seiberling Rubber Co., has celebrated his 35th year of employment with the company.

S. W. Jones, Jr., formerly associated with the M. W. Kellogg Co., has been named manager of plastics development in the Development Department for the FMC Organic Chemicals Division of Food Machinery and Chemicals Corp.

Clifford S. Farmer, previously manager of the Corporate Accounts Department, has been named assistant controller for the B. F. Goodrich Co.

John D. Paulus, former director of public relations and advertising at Jones & Laughlin Steel Corp., has been appointed public relations director for the Firestone Tire & Rubber Co., succeeding William D. Hines, who is retiring.

Donald B. Ladd, previously associated with Bell Aircrafts Commercial Products, has been named to the staff of UBS Chemical Corp. to establish a Commercial Research Department.

James W. Simmons, who formerly operated his own sales representatives organization in the industrial plastics field, has been named sales manager of the operations of H & R Industries.

Donald C. Hay, previously section manager in the Raw Materials Division, has been appointed section manager of new products development for B. F. Goodrich Aviation Products.

Homer S. Myers, previously manager of the Industrial Division, has been named to fill the newly created post of vice-president of marketing for Tracerlab, Inc.

S. F. Long, who has been with the company for almost ten years, has been appointed manager of the Chicago district sales office of the Silicone Products Department for the General Electric Co.

Edward E. Slowter, a member of the technical and executive staff of Battelle Institute since 1936, has been elected vice-president.

George J. Weisenbach, formerly associated with Pacific Mills-Wamsutta Corp., has joined the Wooster Rubber Co. as assistant to the vice-president in charge of sales.

Edward R. Bartley, who has been with the company since 1953, has been named manager of marketing research for the B. F. Goodrich Tire Co.

Leon J. Breton, formerly manager of Market research and development, has been elected assistant vice-president of American Mineral Spirits Co.

John N. Hart, director of employee relations for the B. F. Goodrich Co., has been named controller of the company to succeed H. V. Gaertner, who will retire on September 30 after 41 years of service.

William D. Benson has resigned from his post as vice-president in charge of sales for the Industrial Rayon Corp.

L. R. Ervin, who has been associated with the rubber industry since 1930, has been named general sales manager for the Vulcan Rubber Products Division of Reeves Brothers, Inc.

L. E. Judd, director of public relations for the Goodyear Tire & Rubber Co., has been presented with a diamond studded service pin to commemorate 25 years of continuous association with the firm.

Professor William E. Reaser, formerly on the engineering faculty at Princeton University, has been appointed assistant secretary of the American Society of Mechanical Engineers.

George W. Ewald, formerly with Celanese Corp. of America, has been named manager of the Industrial Synthetic Fabrics Department for J. P. Stevens & Co.

Justin L. Beeson, who was previously on the technical staff of the Goodyear Tire and Rubber Co., has been appointed to the engineering research staff of the Michigan Chemical Corp.

Joseph B. Koesterer has been promoted from senior engineer to manager of engineering in the Akron tire plant of the B. F. Goodrich Co., succeeding Richard T. Wise, who has been transferred to the company's Footwear and Flooring Division in Watertown, Mass.

OTS Report On Butyl Uses

► Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., has released a report on the feasibility of the use of butyl rubber for mechanical goods. According to report PB 121426, research for the Army has determined that with proper plasticizers and antiozonants, butyl rubber can be used in mechanical rubber goods with good results. This elastomer has successfully been used in a wheel cylinder boot, a master cylinder boot, an air brake hose and a windshield wiper hose. Entitled *An Engineering Study to Determine the Feasibility of Using Butyl Synthetic Elastomer in Mechanical Rubber Items*, Final Report, by D. A. Meyer and J. G. Sommer, Dayton Rubber Co. for Detroit Arsenal, U. S. Army, the report also states that high levels of plasticizers were found necessary to meet low temperature brittleness requirements, and a number of them were evaluated. All plasticizers tested lowered the ozone resistance of the butyl compounds, particularly at higher plasticizer levels. The deterrent effects of both antiozonants and waxes were studied and one was selected which increased ozone resistance more than 30 times that of an unprotected control compound. The butyl mechanical items developed showed excellent heat aging characteristics along with the adequate low-temperature and ozone-resistant properties. Published in December 1955, the 33 page volume is priced at $1.00.

New York Elastomers Course

► L. C. Komar (Titanium Pigment), chairman of the Educational Committee of the New York Rubber Group, has announced that the group is sponsoring a fifteen-lecture course in "Basic Elastomer Technology" beginning Monday, October 7, 1957, and concluding February 3, 1958. Classes will meet from 7:30 to 9:45 P.M. at the Engineering Societies Building, 29 West 39th St., New York, N. Y. Because of limited facilities, registration has been limited to the first 200 applications received. Applications for registration will be mailed to the membership during September. The weekly lectures will deal with the history, economics, chemistry and technology of natural and synthetic rubbers. Polyethylene, PVC, and rubber-to-metal bonding will also be covered.

Offers Educational Program

►Seiberling Rubber Co., Akron, Ohio, has announced the initiation of a program, to be conducted in cooperation with the University of Akron, which offers on-the-job training to engineering students. Under the plan, mechanical engineering students in their third year of college may work in various departments of the company, going to school and working for alternate nine week periods. The students will work under the guidance of experienced technical and professional people. The program was arranged through Professor E. K. Hamlen, coordinator of the College of Engineering.

William J. Burke

Appointed Sales Director

► William J. Burke has been appointed director of sales for the Texas-U. S. Chemical Co., New York, N. Y. Mr. Burke, whose headquarters will be located in the company's New York executive offices, will direct all sales activities for the company throughout the United States and abroad. Mr. Burke joined the company from the Texas Co. where, for the past two years, he has been assistant division manager of industrial sales for the Minneapolis Division. He has been in the company's Industrial Sales Department since 1946. A native of Chicago, Mr. Burke is a graduate of Loyola University and completed graduate work in the Engineering Departments of Illinois Institute of Technology and North Carolina State College. During World War II, he was engineering officer on a Navy combat vessel in the Caribbean and Pacific theaters of operation. Mr. Burke is a member of the Society of Automotive Engineers, the American Society of Lubrication Engineers and the New York Rubber Group and Rubber Division of the American Chemical Society.

Named Assistant To President

► Donald Strachan has been appointed assistant to the president of the Lee Rubber & Tire Corp., Conshohocken, Penna. Formerly eastern sales manager for the company's Republic Rubber Division with headquarters in New York City, Mr. Strachan is a graduate of Princeton University and has been with the company since 1933. In 1936, he was appointed Bryn Mawr factory branch manager and held this position until he enlisted in the U. S. Navy in 1942. Following service in the Aleutians, Mr. Lee was appointed Republic's New York district manager, a position he held until 1954, when he was named to the eastern sales position. In addition to his new duties, he will continue as eastern sales manager. The company has also announced the appointment of William B. Dunlap, Jr., as manager of development and research for the Lee Division in Conshohocken, Penna. Mr. Dunlap previously served as manager of the Laboratory and Compound Division.

Cabot Receives ICA Guaranty

► Godrey L. Cabot, Inc., Boston, Mass., has obtained U. S. Government Guaranties covering a cash investment of some $2,215,000 in a subsidiary in France and also covering royalties to be paid by the French subsidiary under a patent licensing arrangement. Cabot's French subsidiary, to be known as Cabot France, S. A., will manufacture carbon black, and the American firm will acquire most of the capital stock of the subsidiary through the cash investment. Cabot has also granted to Cabot France lincenses to use certain patents and has agreed to furnish technical data for the contruction and operation of the carbon black plant for a period of 15 years. The French subsidiary has agreed to pay fees and royalties in return. The guaranties, issued by the International Cooperation Administration, insure the convertibility into dollars of royalties and returns from the investment and also insure the American firm against financial loss in the event of expropriation of the investment property. The Cabot firm was the first to obtain coverage for an overseas venture under ICA's investment guaranty program, having received such a guaranty in October, 1948 to protect an investment in a carbon black plant in the United Kingdom. Another guaranty contract was issued to Cabot to protect an investment in the Federal Republic of Germany.

Introduces Vulcacure NS

► Alco Oil & Chemical Corp., Philadelphia, Penna., has introduced a new liquid ultra accelerator, called "Vulcacure NS", for use in both natural and synthetic latex compounds. Said to produce both a high modulus and high tensile strength in latex rubber films, Vulcacure NS is completely water soluble and can be used successfully over a wide range of curing temperatures, from 70° to 300°F., the company says. The new ultra accelerator is of liquid dithiocarbamate type with a low viscosity which insures uniform distribution throughout latex and provides a tighter cure (tack-free) than possible heretofore with most similar compounds, the company claims. The material is also said to have excellent aging characteristics. The new material is packaged in non-returnable containers and is available by the drum or in 5 to 50 gallon quantities to satisfy individual requirements.

Builds Pensacola Unit

► Heyden Newport Chemical Corp., New York, N. Y., is constructing a new plant at Pensacola, Fla., to produce terpene alcohol esters, which are used in the rubber, soap, perfume, plastics, tobacco and other industries. The new plant, scheduled for completion in the fourth quarter of 1957, is part of Heyden Newport's expansion program for up-grading turpentine-based products, the company said. Also planned is large volume production of terpinyl acetate and iso-bornyl acetate. The company will also produce menthyl acetate and neomenthyl acetate in commercial quantities for the first time at the new plant.

ASTM Committee D-11 Announces Issuance of Permanent Numbers for Several Butadiene-Styrene Polymers

▲ In accordance with the tentative recommended practices set for in ASTM D-1419-56T and D-1420-56 T, Committee D-11 on Rubber and Rubberlike Materials of the American Society for Testing Materials has begun the issuance of permanently assigned numbers to butadiene-styrene polymers. Requests for assignment of numbers are initiated by manufacturers who must submit the pertinent data required. This recommended practice is intended to establish numbered types of synthetic rubbers containing styrene (SBR rubbers) according to their method of manufacture and general physical properties. The numbering system is not intended to serve as an actual purchase specification as no maximum or minimum limits are given. It should, however, be helpful to both manufacturers and purchasers of the rubbers by classifying them in such a way as to avoid confusion. In operation, Subcommittee XIII on Synthetic Elastomers issues the permanent numbers when requested by the manufacturers. The chairman of Subcommittee XIII, Dr. B. S. Garvey Jr. (Pennsalt Chemicals), notifies the secretary of Committee D-11, who arranges for the publication of these numbers in the appropriate journals. It should be noted that these numbers do not become part of the Recommended Practices until they have been letter balloted in D-11 and accepted by the parent society. They are published here for general information only.

Number	Date	Distinctive Feature	Previous Number	Nom. Temp., °F.	Activator	Shortstop	Antioxidant	Catalyst	Emulsifier	Nom. Conv., %	Nom. Bound Styrene, %	Nom. Mooney Visc. ML 1 + 4, Polymer (212°F.)	Nom. Mooney Visc. ML 1 + 4, Compound (212°F.)	Nom. Res. Vol. Unsat., %	Nom. pH	Nom. Surf. Tens., Dynes/cm.	Nom. Coagulum on 80% screen, %	Coagulation	Nom. total solids, %	Carbon black type	Carbon black, %	Oil Type	Oil parts	Finishing
1605[1]	5/1/57	FEF black masterbatch	—	43	FRA	ND	NST	OHP	FA	60	23.5	—	—	62	—	—	—	GA	—	FEF	33.3	—	—	N
1773[2]	5/1/57	Non-staining naphthenic oil masterbatch	1773	43	FRA	ND	NST	OHP	M	60	23.5	60	—	—	—	—	—	SA	—	—	—	NST-NAPH	25.0	N
1778[2]	5/1/57	Non-staining naphthenic oil masterbatch	1707, 1708	43	FRA	ND	NST	OHP	M	60	23.5	55	—	—	—	—	—	SA	—	—	—	NST-NAPH	37.5	N
1803[1]	5/1/57	HAF black highly aromatic oil masterbatch	—	43	FRA	ND	ST	OHP	M	60	23.5	—	—	65	—	—	—	SA	—	HAF	28.6	HI-AR	25.0	N
1812[1]	5/1/57	ISAF black highly aromatic oil masterbatch	—	43	FRA	ND	ST	OHP	M	60	23.5	—	—	57	—	—	—	SA	—	ISAF	26.7	HI-AR	37.5	N
2110[4]	5/29/57	FA emulsifier—60% solids	—	50	FRA	ND	—	OHP	FA	60	25.0	—	—	—	9.5	—	0.10	—	60	—	—	—	—	—
2111[3]	5/29/57	RA emulsifier—20% solids	—	50	FRA	ND	—	OHP	RA	60	23.5	52*	—	—	9.5	—	0.10	—	20	—	—	—	—	—
2112[3]	5/29/57	RA emulsifier—40% solids	—	50	FRA	ND	—	OHP	RA	60	23.5	52*	—	—	9.5	—	0.10	—	40	—	—	—	—	—

Notes: (1) Requested by Phillips; (2) Requested by Goodyear; (3) Requested by Copolymer. M—Mixed; N—Normal. * Mooney Visc. ML 1 + 5.

Establishes New Division

► A new Chemical Division has been established within the Goodyear International Corp., subsidiary of the Goodyear Tire & Rubber Co., Akron, Ohio, to handle more efficiently the growing overseas sales of Goodyear chemical products. The new division will handle matters relative to overseas sales of synthetic rubber, rubber chemicals, plastic raw materials and coating raw materials. Herman R. Thies, general manager of the Chemical Division, will handle its sales policy and direction, reporting to F. T. Magennis, president of the Goodyear International Corp.

Two departments, a Home Office and Field Sales, have been established within the new division. R. E. Workman, named manager of the division, has been awarded a Sloan Fellowship to the Massachusetts Institute of Technology and will be absent from his post for one year. R. E. Earhart, assistant general sales manager for the parent company's Chemical Division, has been named acting manager in Mr. Workman's absence. Also appointed to home office positions were J. S. Amrein, as administrative assistant, and O. R. Gillen, as manager of technical service. Mr. Amrein was formerly manager of the Films and Chemical Products Section in Goodyear's export sales organization and Mr. Gillen was formerly sales service representative for the Chemical Division's Rubber and Rubber Chemicals Department.

The Field Sales Department of the new division is divided into three sales areas: European, Far Eastern and Western Hemisphere. W. D. Porter, former special representative for the Special Products Department of Goodyear's overseas sales organization, has been appointed sales manager in Europe with headquarters in London. Four field representatives have been assigned to the European area: G. H. Campbell to Munich, Germany; J. H. Drexler to Cologne, Germany; F. W. Milward, to Paris, France and C. S. Pyne to Brussels, Belgium. N. P. Wileman has been appointed field representative for the Far Eastern area and P. A. Colgate has been assigned the same post for the Western Hemisphere area. Both men will be headquartered in Akron, Ohio.

Expands Hysol 8530 Series

► Houghton Laboratories, Inc., Olean, N. Y., have introduced two new liquid urethane rubbers in the "Hysol 8530" series. Products made with these compounds are said to be useful in encapsulating fragile electronic components, as impregnants for fibrous materials and as adhesives and sealants. According to current reports, the products have excellent low temperature flexibility at minus 65°C., together with toughness and extreme abrasion resistance. They are also self-extinguishing. Designated "Hysol 8531" and "Hysol 8532," they are low viscosity versions of Hysol 8530. Hysol 8531 is a liquid epoxy base which may be blended with either 8530 or 8532. Flexibility of the cured compound can be changed by varying the ratio.

New Seiberling Safety Tire

► Seiberling Rubber Co., Akron, Ohio, has announced a new "1957 model" of a premium passenger car tire claimed to be strong enough to withstand the shock of landing of an F-86 Sabre Jet. Development engineers at the company have added a feature called "silencer blocks" designed to improve the tire's road-gripping abilities and cut tire squeal. Small knobs are located in the tread grooves nearest to the tire's shoulders, acting as bumpers to keep the tread ribs from closing up under load. Seiberling engineers claim that by decreasing this tread movement during sharp turns and sudden stops, the tire hugs the roads more firmly. In the same way, the knobs serve as "noise suppressors" because tread movement is a major cause of tire squeal.

Company engineers stated that introduction of 14-inch tires raised a problem in that smaller diameter tires rotate more times to cover a given distance than 15-inch tires. This steps up the rate of sidewall flexing which can lead to failures from weakened cords. The Safety tire has "flex-arc" construction and by special contouring of the tire's shoulder region, the flexing area is increased by 45 per cent over previous models. This reduces "hinging action," a cause of cord fatigue. Appearance of the Safety tire has been changed by narrowing the white sidewalls and relocating sidewall bars for greater protection from scuffing. A new pattern is embossed around the heat vents.

Carwin Forms Subsidiary

► Carwin Co., North Haven, Conn., has formed Carwin Polymer Products, Inc., a wholly owned subsidiary in order to develop, manufacture and market industrial materials and end products incorporating the properties of new heat and solvent-resistant polymers that have resulted from Carwin's research program. These polymers range from plastics to elastomers in both cellular and non-cellular forms and are under development as insulating, acoustical, shock absorbing, frictional, sealing and reinforcing materials. C. E. VanWinckel will serve as president, Richard Kithil, as vice-president, Ralph Perkins, sales manager and David E. Cordier, technical director.

Carbide Promotions Announced

► Development Department of Union Carbide Chemicals Co., New York, N. Y., has announced several promotions. C. A. Carter, G. L. Funk, E. F. Hillenbrand, Jr., Dr. P. C. Johnson, Dr. R. E. Leech and C. R. Welter have been promoted to assistant directors of the Development Department. H. J. Jackson has been promoted to Development Area Supervisor. Previous to their promotions, they were technical supervisors in the Development Department.

William C. Leingang

Appointed General Manager

► William C. Leingang, formerly assistant to the president of the Electric Storage Battery Co., has been appointed general manager of the company's Stokes Molded Products Division, Trenton, N. J. He will continue as a member of the Management Committee of the company. Mr. Leingang joined the firm's Detroit sales office in 1923, shortly after graduating from the University of Michigan with a degree in electrical engineering. He served as manager of the company's Chicago plant for six years, beginning in 1947, and was later named assistant general manager of the Exide Automotive Products Division. He was named assistant to the president in 1955. Mr. Leingang is a member of the American Institute of Management, Society for Advancement of Management and Society of Automotive Engineers.

Titanium Chlorides Available

► Metal Division of the New Jersey Zinc Co., New York, N. Y., has announced the availability of titanium dichloride and trichloride in multi-pound quantities. Considered promising catalysts for isotactic polymerization of unsaturated hydrocarbons, such as ethylene, proplyene and butene, both materials are free-flowing, dark purple, crystalline powders. Introductory prices of $5.00 to $10.00 per pound, depending on quantity have been established for titanium trichloride and $15.00 per pound for titanium dichloride.

Relocate Division Offices

► Treasurer's Division of the Esso Research and Engineering Co. has announced that division offices have been relocated in the company's new building at 425 Park Ave., Linden, N. J. The mailing address is P. O. Box 172 and the new telephone number, Wabash 5-1600. On or about August 31, the purchasing offices will also be transferred to the above address.

Develops Polyfoam Cushioning

► Development of a new material called "Polyfoam" has been announced by the General Tire & Rubber Co., Akron, Ohio. A new light-weight cushioning material, Polyfoam is said to have almost unlimited applications. The new material, a polyether based urethane foam, was in development for more than two years and has now been put into volume production at the company's Marion, Ind. plant. The company has discontinued production of conventional polyester based urethane foams and will concentrate its full foam facilities on the manufacture of this new material. In addition to use in the furniture and automotive industries as a cushioning material, Polyfoam is slated for wide application in the aircraft, bedding and clothing industries and as an underlay and insulating material. With a weight of less than half of that of natural latex foam, Polyfoam is said to have greater resilience, better cushioning qualities and better showroom feel than other types foam products. The high tensile strength of the product enables manufacturers to sew or stitch directly through the material, according to the company. Polyfoam also has a high degree of compatibility with other materials. A new sales organization has been established to handle Polyfoam and a distribution system is currently being set up throughout the country. Polyfoam is a registered trade name of the General Tire & Rubber Co.

Silastic Catalyst S-2084

► Dow Corning Corp., Midland, Mich., has announced a new masterbatch compound for use in simplifying the fabrication of silicone rubber. Named "Silastic Catalyst S-2084", the product is made up of Silastic gum, inert fillers and 20 per cent, by weight, of ditertiary butyl peroxide. Greatly reducing the fire hazard inherent in working with 100 per cent liquid ditertiary butyl peroxide, the high peroxide ratio also minimizes the addition of contamination from foreign ingredients during further compounding, according to the company. Silastic Catalyst S-2084 is said to contain no ingredients which might introduce possible side effects on the properties of the silicone rubber compound in which it might be used.

Buys Swim Accessories Line

► Auburn Rubber Co., Inc., Auburn, Ind., has announced the purchase of the Superior Jet swimming accessories line from Superior Fabricators, Inc., Chicago, Ill. H. M. Blumberg, founder and president of Superior Fabricators as well as one of the pioneers in the manufacture of swim fins, swim masks and snorkels in the popular priced field, will assist Auburn in the continued sales, distribution and product development of this swim accessory line. The merchandise will be manufactured and distributed from the Auburn plant in Auburn, Ind. Auburn's sales channels for the Superior Jet swim accessories will be the same as for toys.

Financial News

General Tire & Rubber

► Six months ended May 31: Estimated net income of $5,814,861, which is equal to $3.38, compared with $4,027,432, or $2.41, a share, in the corresponding six month period in 1956. Sales in the first six months of 1957 totaled $205,968,169, 15.8 per cent more than the $177,796,438 volume last year.

Clevite

► Six months ended June 30: Net income of $2,798,557, which is equal to $1.48 a share, compared with $1,556,087, or 79c a share, in the first six months of 1956. Sales in the first half of 1957 totaled $39,684,682 compared with $36,528,043 in the same period last year.

Stauffer Chemical

► Six months to June 30: Net income of $7,154,000, which is equal to $2.07 a share, compared with $7,344,000, or $2.12 a share, in the corresponding period of the preceding year. Sales in the six month period totaled $79,337,000, compared with $80,471,000 in the same period last year.

Dayton Rubber

► Six months ended April 30: Net income of $917,205, which is equal to 95c a common share, compared with $1,093,299, or $1.29 a share, in the same period last year. Sales in the six months to April 30 totaled $37,356,158 compared with $34,321,742 in the same period last year.

Pennsalt Chemicals

► Six months to June 30: Net income of $1,955,749, which is equal to $1.53 a share, compared with $2,147,972, or $1.73 a share, in the first half of 1956. Sales in the six month period to June 30 totaled $40,798,282, compared with $37,118,293 in the same period last year.

Wyandotte Chemicals

► Six months ended June 30: Net income of $2,208,722, which is equal to $1.37, a common share, compared with $2,157,704, or $1.33 a share, in the corresponding period last year. Sales for the six months ended June 30 were $40,153,276 compared with $37,194,039 a year ago.

Industrial Rayon

► Six months to June 30: Net income of $1,409,305, which is equal to 76c a share, compared with $3,476,551, or $1.88 a share, in the first half of 1956. Sales in the six months to June 30 totaled $30,963,800 compared with $31,891,030 in the same period last year.

Sheller Manufacturing

► Six months to June 30: Net income of $1,152,963, which is equal to $1.21 a common share, compared with $820,210, or 86c, in the same period last year. Sales in the first six months of 1957 amounted to $22,375,385 compared with $21,810,760, in the corresponding period of the preceding year.

B. F. Goodrich

► Six months to June 30: Estimated net income of $19,728,926, which is equal to $2.21 a common share, compared with $21,507,367, or $2.41 a share, a year earlier. Consolidated net sales for the first six months of 1957 were $366,008,979 against $364,374,921, in the same period last year.

Brunswick-Balke-Collender

► Six months ended June 30: Net income of $1,262,800, which is equal to $2.27 a common share, compared with $391,110, or 67c a share, in the first half of the preceding year. Sales in the first six months of 1957 totaled $45,374,923 compared with $17,109,829 in the same period last year.

National Automotive Fibers

► Six months to June 30: Net income of $888,046, which is equal to 81c a share, compared with a net loss of $48,860, in the first six months of the preceding year. Sales in the first half of 1957 totaled $27,775,554 compared with $26,624,458 in the corresponding half of 1956.

Thiokol Chemical

► Six months to June 30: Net income of $650,483, which is equal to $1.34 a share, compared with $386,516, or 85c a share, in the corresponding period of 1956. Net sales in the first six months of 1957 totaled $12,987,278 compared with $9,759,812 in the same period last year.

Johns-Manville

► Quarter to June 30: Net income of $5,660,000, which is equal to 79c a share, compared with $7,894,000, or $1.23 a share in the second quarter of 1956. Sales in the second quarter of 1957 totaled $82,417,000, compared with $82,685,000 in the same period last year.

McNeil Machine & Engineering

► Six months to June 30: Net income of $1,804,239, which is equal to $3.00 per common share, compared with $1,362,273, or $2.32 a share, in the first six months of the preceding year.

Vaile A. Cosler

Retires From DuPont

► E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., has announced the retirement of Vaile A. "Vac" Cosler, who has been in the rubber industry for 40 years. During the past 14 years, Mr. Cosler has been sales promotion manager for the company's synthetic rubbers and related products. A native of Ohio, Mr. Cosler received a Bachelor of Science degree in chemical engineering from the Ohio State University. He began in the rubber industry in 1917, when he joined the B. F. Goodrich Co. as an analytical chemist. After 13 years with Goodrich, he joined the Hewitt Rubber Co. as a technical director.

Mr. Cosler joined DuPont in May, 1934, as a demonstrator in the Rubber Chemicals Division and became sales development manager of that division in 1943. Later, he was named sales promotion manager and in this capacity, he directed promotional programs for neoprene rubber. For the past several years, his promotional responsibilities have been expanded to cover Hypalon synthetic rubber and urethane foams. During World War II, Mr. Cosler served with the Rubber Section of the War Production Board and also acted as special consultant to the Research and Development Section of the Quartermaster Corps of the U. S. Army. Mr. Cosler was for many years a member of the Technical Committee of the Rubber Manufacturers Association, the American Chemical Society and the American Society for Testing Materials. He has given a number of papers before both the A. S. T. M. and the A. C. S.

Buys Ethical Drug Firm

► Corbin & Conwell, Inc., ethical drug division of International Latex Corp., Dover, Del., has acquired Tailby-Nason Co., Cambridge, Mass., another ethical drug concern. Purchase price has not been disclosed. The company did not disclose figures on the size of Tailby-Nason, other than that its products are in national distribution. Tailby-Nason makes coal tar ointments for dermatological use, muscle relaxants and sedatives.

Silanes Study Released

► *Chlorosulfonation of Silanes and Related Reactions,* a report on Air Force sponsored research in the field of chemistry, has been released by the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. Written by C. G. Overberger and F. M. Beringer, Polytechnic Institute of Brooklyn for Wright Air Development Center, the report deals with progress in the synthesis of polar organo-silicon monomers capable of polymerization to synthetic rubber. The polar groups were to decrease the solubility of the silicone rubber in organic solvents as well as increase the transition temperature. Six preparation methods were attempted. Direct photochemical chlorosulfonation of silanes with sulfuryl chloride was tried without success. Direct chlorocarbonylation of tetraethylsilane with oxalyl chloride was effected. Three silanes, probably containing the $-CH_2SCN$ group were prepared, but could not be converted to compounds with $-CH_2SO_2Cl$. Vinyltriethoxysilane with methylmagnesium iodide gave vinylmethyldiethyoxysilane and vinyldimethylethoxysilane. Benzyl and phenyl mercaptans were added to those vinylsilanes to give substituted betathioethylsilanes.

Cycolac Plant On Stream

► Borg-Warner Corp., Chicago, Ill., has completed a $10 million chemical plant for the manufacture of "Cycolac" resin, a new, hard, tough, heat-resistant, plastic material. To be operated by the company's Marbon Chemical Division, the plant is located at Parkersburg, West Va., on a 322 acre site with a 3500 foot frontage on the Ohio River, convenient for the receipt of raw materials by barge transportation. The new unit will eventually consist of a group of individual fireproof buildings, dispersed for maximum safety and efficient operation. Among the facilities is a large warehouse equal in size to a football field. Marbon Chemical Division has also announced the availability of Cycolac in a smaller, more uniform size. The new pellets, 3/32" in size, make possible greater uniformity of heat transfer, which is necessary to obtain maximum shot size and good surface, has a definite affect on cycle time and fill and reduces the possibility of overheating. Maximum uniformity of heat plasticization is more readily obtained. Other advantages of the new type pellet cubes are improved hopper loading and better hopper flow.

Announces New Neoprene Latex

► E. I. du Pont de Nemours & Co., Inc., Wilmington, Del., has announced "Neoprene Latex Type 650," which has been concentrated to 60% solids by creaming the new, general purpose Type 750. Films from Type 650, like those from Type 750, are said to be soft and pliable approaching natural rubber in this respect, while retaining the properties characteristic of neoprene. According to the company, products made from Type 650 have excellent resistance to crystallization and exhibit high wet gel strength.

Bunch Named Manager

► Plating Equipment Division of the Automotive Rubber Co., Inc., Detroit, Mich., has appointed Jess E. Bunch, manager and Richard A. Noblett, assistant manager of the division. As manager, Mr. Bunch will be in charge of the fabrication, manufacture, engineering and development of anodizing and plating equipment for the industry. A native of Oaktown, Ind., Mr. Bunch joins ARco after 26 years as superintendent of the Plating Division of the Cadillac Motor Car Co. Other divisions under Mr. Bunch's direction at Cadillac were Engine Manufacturing and Assembly, Welding Division and Grey Iron Foundry. Mr. Noblett, a native of Detroit, formerly served as project engineer with Hudson Motor Car Co. on the Boeing B-47 and R-47 aircraft development. He joined ARco in 1953 remaining until 1954 when he was called into the Service as a 1st Lieutenant of the U. S. Army. In 1955, Mr. Noblett rejoined the engineering staff at ARco.

To Buy Phoenix Manufacturing

► Union Tank Car Co., Chicago, Ill., has arranged to acquire the Phoenix Manufacturing Co., Joliet, Ill., and its subsidiary, the Graver Tank and Manufacturing Co. of East Chicago, Ill. Directors of both companies approved terms on July 17, subject to approval of Phoenix stockholders in August. Union Tank is to issue 2.1 shares of its stock for each share of Phoenix, which has 210,120 shares outstanding.

Buffalo Holds Summer Outing

► The Buffalo Rubber Group held its annual summer golf outing on June 11 at the Lancaster Country Club, Lancaster, N. Y. The planned activities included golf, a softball game and other sports events. Bob Sucher (Witco Chemical) won low gross honors in golf. The festivities were concluded with a steak dinner and the distribution of prizes.

New Polyester Developed

► A new polyester resin, "Hetron 33", has been developed in limited commercial quantities by the Durez Plastics Division of Hooker Electrochemical Co., North Tonawanda, N. Y. Hetron 33 is a medium viscosity semi-rigid type polyester with excellent strength qualities. Recommended for use with glass fiber where good impact and flexural strength are required in combination, the product compares favorably with Hetron 32A, which has been accepted by plastics fabricators for many applications, the company states. Hetron 33 is available at 39c per pound, delivered in truckloads, about 13 per cent less than the 32A resin. The new material is said to be an excellent molding resin, especially for matched die molding. Laminates made from it are strong, stiff, resist impact cracking and, in addition, are self-extinguishing. Tests made by the company indicate that such laminates can be baked at 350°F. for 90 minutes several times without crazing or cracking. Preliminary data sheet No. 397 is available upon request to the company.

Adds Color Line For Plastics

► Vansul Corp., Englewood, N. J., producer of color dispersions for the rubber trade, has added the manufacture of color dispersions for the plastics trade. The organization said that it feels there is a need in the plastics trade for a quality group of color dispersions which are suitable for most types of plastic compounding. A newly published plastic color chart shows some 28 available colors in five different types of color concentrates. For vinyl compounding, there are "Vinyl Color Chip Concentrates," "DOP Color Pastes" and "Powdered Vinyl Color Dispersions." For polyester and polyurethane compounding, what is said to be a unique type of color paste has been developed. There are also "Polyethylene Color Chips" which insure complete color dispersion in either polyethylene or in natural rubber with a minimum of mixing or compounding, according to the company.

Tenney Engineering Celebrating Twenty-Fifth Anniversary

► Tenney Engineering, Inc., Union, N. J., manufacturer of environmental test equipment, celebrates its 25th anniversary this year. The organization was founded in 1932 in Newark, N. J. During World War II and the Korean conflict, company growth was accelerated and the corporation now maintains plants in Union, N. J., and Baltimore, Md. According to the company, Tenney has supplied chambers for testing equipment in electronics since the infancy of science and is now developing chambers for simulating conditions that will be met by future supersonic craft.

West Coast News

► Construction of the Freedlander Research and Development Laboratories, "A" Division, as part of an over-all construction and development program by American Latex Products Corp. of Hawthorne, Calif., has been announced by President Clowes M. Christie. Engineering, design and construction of the two-story, 25,000 square foot, $150,000 structure is by Butler Manufacturing Co. of Los Angeles. Completion is scheduled for September 15, 1957.

Located at 3341 El Segundo Blvd., Hawthorne, American Latex Products Corp. is one of the largest fabricators and manufacturers of foam rubber on the Pacific Coast and a pioneer in the field of polyurethane plastics.

The company currently is allotting thirteen per cent of its sales dollar on chemical and engineering research compared with between two and three per cent for industry as a whole. In the polyurethane, foamed plastic field, American Latex is now one of the principal suppliers of the versatile material to the aircraft, electronic, upholstering, refrigeration, marine, construction, missile, rug and carpet, and automotive industries.

► In memory of the late R. D. Abbott, who was chairman of The Los Angeles Rubber Group, Inc., when the TLARGI Foundation was established at the University of Southern California, the first annual TLARGI Memorial Fund scholarship will be awarded at the university this fall. Recipient of the first scholarship will be Charles Pierce Bopp, a senior chemical engineering major in the USC School of Engineering.

The Memorial Fund was started by the Foundation, which is a joint effort of TLARGI and USC, two years ago when its officers decided to suggest memorial gifts rather than flowers when TLARGI members or members of their families died. Mr. Abbott was instrumental in setting up the Fund. More than $5000 has been contributed to date. Income from this money will be used to provide a $500 scholarship award each academic year at USC.

Mr. Bopp was selected by the Foundation's Advisory Board from candidates recommended by the USC School of Engineering. He is a graduate of Metropolitan High School, Los Angeles, and served with the Navy and attended El Camino Junior College before entering USC.

► Shell Chemical Corp. has announced construction of a unit to produce allylamines—experimental chemicals for which scientists recently have found promising commercial uses. The unit, located at the company's Martinez, Calif., plant, is designed to manufacture mono-, di-, and triallylamines. Each of the chemicals has been known in the laboratory for many years, according to L. V. Steck, Shell Chemical's marketing vice-president. Shell began research on the allylamines in the 1930's, and built a pilot plant to produce larger test quantities in the 1940's.

Current research points toward potential uses for each of the chemicals, Mr. Steck said. Monoallylamine shows promise as a chemical for the manufacture of resins, surface active agents, rubber chemicals, pharmaceutical compounds, and dyestuffs; diallylamine in the preparation of pharmaceuticals, and rubber chemicals; and triallylamine as an intermediate in the production of quaternary ammonium compounds.

► Burke Rubber Co., now building a large new plant in San Jose, Calif., which will cost more than $750,000, has announced conclusion of negotiations on important sub-contracts to extend over the next 18 months. Halsey Burke, executive vice-president, said the contract was signed with a mid-Western national firm engaged in producing material for the nuclear energy field.

Virgil Price, manager of Burke Rubber's Industrial Rubber Products Division, said that as part of the firm's product line diversification, it has been actively engaged in development work for both nuclear weapons and nuclear power fields. In this program, spearheaded by Mr. Price and Drace W. Kutnewsky, technical director, a thorough study was made of rubber and rubber-like products needed for nuclear energy application. As a result, research and development programs produced new techniques and processes which are now finding production applications.

FBRAMA Announces 1957 Officers

► Federation of British Rubber and Allied Manufacturers' Associations has announced the election results of various affiliated organizations in England. At the annual general meeting of the British Moulded Rubber Hose Manufacturers' Association, the following were re-elected: S. G. Deaves (British Tyre), chairman; J. S. Faulder (British Tyre), honorary secretary and R. S. Ede (British Tyre), honorary treasurer. The British Seamless Rubber and Plastics Manufacturers' Association re-elected S. D. Sutton (Veedip) as chairman and A. R. Reid (London Rubber) as vice-chairman. Members of the British Rubber and Resin Adhesive Manufacturers' Association re-elected D. E. Cameron (B. B. Chemical), chairman and N. G. Bassett (Smith Dunlop), vice-chairman. Mr. Bassett and Dr. H. Simon (Evode) were elected at the same meeting to represent the organization at the FBRMA. The Rubber Proofers Association re-elected E. P. Rydings (Zama) as chairman and A. N. Haworth (Ferguson Shiers) as vice-chairman.

Richard C. Kremer

Named Sales Vice-President

► Richard C. Kremer has been named vice-president in charge of general sales for the Ohio Rubber Co., Willoughby, Ohio, a division of the Eagle-Picher Co. Mr. Kremer joined Ohio Rubber as a sales engineer in 1947 and was promoted to factory manager in 1952. He is a graduate of Ohio State University, receiving a B. S. degree in geology in 1937. He attended graduate school at Stevens Institute of Technology at Hoboken, N. J. and is also a graduate of the Management School of the American Management Association. Formerly, he was a geologist for Geophysical Co., Inc., Pittsburgh, Penna. and later became sales engineer, product design engineer and supervisor of railroad design and engineering in the New Products Department of the Mechanical Goods Division for the U. S. Rubber Co. in New York City. He is a member of the American Management Association, the National Management Association and the Akron Rubber Group of the American Chemical Society.

Develops New Vinyl Resin

► A new vinyl resin, designed primarily for dry blending, has been introduced by the Bakelite Co., New York, N. Y. According to the company, the new resin, used with a new extrusion technique, enables fabricators to produce high quality products at top production rates. The new technique employs a valve for controlling pressure continuously and the resulting product is said to be comparable and in some cases superior to that achieved with some hot-flux materials. Both the new resin, designated "QYRS," and the basic concept of pressure-controlled extrusion are the result of extensive development work at Bakelite. The new technique was developed in connection with a study of factors affecting quality in polyethylene extrusion. A number of extruder manufacturers have been working on development of a valve for commercial use, based on Bakelite fundamental work, and one is already on the market, according to the company. The mechanism is located between the die and the extruder head. Pressure is adjusted by means of the valve, used in connection with a pressure gauge and immersion thermocouple.

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Develops Two New Products

► Chemical Division of the Goodyear Tire & Rubber Co., Akron, Ohio, has introduced two new products, "Pliolite Latex 151", an aqueous dispersion of a styrene-butadiene copolymer, and "Pliolite VT", a new coating resin soluble in mineral spirits. Pliolite Latex 151, intended chiefly for reinforcing other types of latex, is not in itself film-forming. The latex contains a tough, resin-like copolymer capable of bolstering hardness, stiffness and modulus of styrene, nitrile, neoprene and natural rubber latices. Addition of the latex may also improve tensile strength and tear resistance. Adaptable to both cured and uncured formulations, Pliolite Latex 151 can be blended with most other rubber latices and subsequently compounded. Pliolite VT is designed specifically as a solution binder for coating. This resin is supplied in the form of friable granules and can be solvated by using conventional equipment. Complete solution is possible with aliphatic solvents having a Kauri Butanol value as low as 36. Films which are formed by evaporation of solvent rather than oxidation show excellent clarity and are resistant to acids, alkalies and greases. Solutions of Pliolite VT provide rapid wetting of color pigments.

Offers Solux NS Antioxidant

► "Solux NS," a new non-discoloring, non-staining, solid antioxidant, developed by the Elastomer Chemicals Department of E. I. du Pont de Nemours & Co., Wilmington, Del., is said to provide excellent protection against the deteriorating effects of heat and oxygen with an absolute minimum of discoloration and staining. Where little or no discoloration can be tolerated in a stock, the best antioxidants appear to be the recently discovered hindered phenols, DuPont states. Solux NS is said to be an outstanding material in this class. The new antioxidant provides a high degree of protection from oxidative degradation and when used in white stocks, it causes no discoloration. The material gives excellent performance in natural rubber, styrene rubber, neoprene compositions and in the latices of these rubbers and does not cause pinking or other discoloration of fabrics made of cotton or the various commercial synthetic fibers. It is also said to be an effective antioxidant in stocks containing carbon black.

Plastics Exposition Planned

► The Eighth National Plastics Exposition, sponsored by the Society of the Plastics Industry, Inc., will be held at the International Amphitheatre in Chicago, Ill. from November 17 to 21. Concurrently with the exposition, the National Plastics Conference will be held at the Hotel Morrison in Chicago. The exposition will market the products, processes and equipment of the $2 billion plastics industry and is expected to draw hundreds of exhibiting companies and thousands of visitors. Committees which will be charged with running both the exposition and the conference will be announced shortly.

To Build New Chemicals Unit

► Union Carbide Corp., New York N. Y., plans the construction of a major chemicals plant in Putnam County, W. Va. Large volumes of basic chemical products will be produced at the facilities to "meet the continuing growth of Union Carbide's petrochemicals business", the company says. The new plant, to be completed in 1960, will be the company's eighth major chemicals producing plant and will be operated by the Union Carbide Chemicals Co. The new division, the third unit for the production of organic chemicals in the region, will produce chemicals for the market and supply raw materials for further processing at the South Charleston and Institute plants. It will provide additional ethylene and propylene and will be designed for the greatest possible flexibility to meet changes in market demands for chemicals as they occur in the future. Three of the more important chemicals to be made at this plant are ethanol, ethylene oxide and isopropanol. The plant site is on the south bank of the Kanawha River near the town of Winfield. The river provides process water for steam and cooling. Suitable dock installations will make possible the fullest use of water transportation.

Receives European Patents

► Eight patents in two foreign countries, Spain and Italy, have been granted to the Firestone Tire & Rubber Co., Akron, Ohio, on methods for the production of "Coral" rubber. The patent numbers are: Spain—230,655, 231,396, and 231,397; Italy—559,160, 559,704, 560,200, 561,343 and 561,529. Firestone now has more than 70 patent applications filed in the U. S. and in foreign countries on this development. The process developed by Firestone for the production of Coral is said to produce a high quality, high molecular weight rubber which consistently gives less heat build up than natural rubber and has an excellent degree of reproducibility. Technical details of the process were first presented to the Division of Rubber Chemistry at the American Chemical Society at Philadelphia on November 3, 1955.

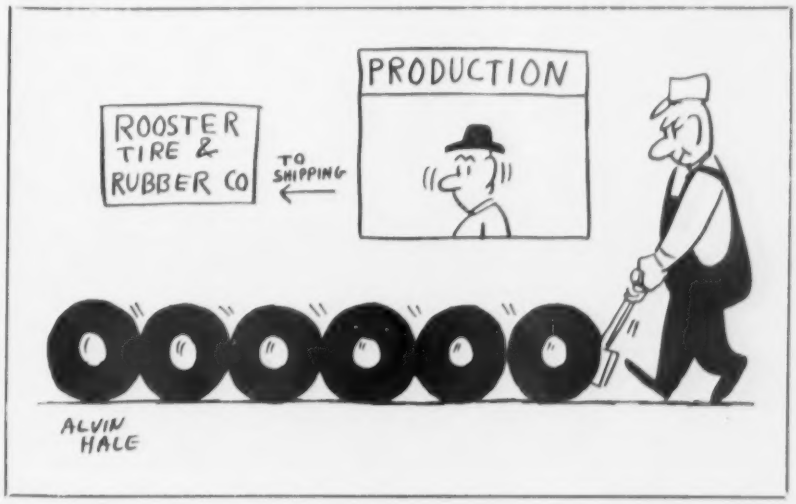
Announces Personnel Change

► Silicones Division of Union Carbide Corp., New York, N. Y., has announced the appointment of R. S. Abrams as general manager and L. J. Sinnott as general sales manager. Mr. Abrams joined Union Carbide in 1941 at the Linde Air Products Co. in Tonawanda, N. Y. From 1943 to 1946, he held various positions at Linde's ceramics plant there under the Army's Manhattan District project. He was transferred to Chicago in 1946 as superintendent of Linde's alum plant. In 1947, he returned to Tonawanda to work on various aspects of silicones research, development, design and plant operation. He became manager of the silicones plant at Long Reach, West Va., in 1955 and earlier this year, was appointed manager of production and engineering for the Silicones Division.

Mr. Sinnott joined Union Carbide in 1942 as a development engineer for Linde Air Products Co. in Newark, N. J. The following year, he moved to the Cleveland sales office, later becoming sales manager in the district office at Denver, Colo., and then manager of the Pacific Northwest District office at Seattle, Wash. In 1951, he was transferred to the New York office of Linde to fill a staff position in market development work. He became sales manager for Linde's Silicones Department two years later.

New Red Pigment Described

► Properties of "Polaris Red CP-1285" manufactured by the Color and Chemical Division of the Sherwin-Williams Co. New York, N. Y., are described in *Technical Bulletin No. C 66*. A new type B-O-N red pigment, Polaris Red has been developed for use in the rubber and plastics industries. It is a clean, bright, exceptionally bluish shade of red with improved light resistance. The pigment is said to be particularly useful in rubber, vinyl plastics, polyethylene, and synthetic fibers because of its good light resistance, especially in tints. The color has good tinting strength, similar to that of the Lithol Rubines, good bleed resistances and is easy to grind.



Canadian News

► Polyethylene is heading for another record sales year in Canada as well as in the United States. Plastics businessmen are forecasting that consumption of this fast-moving material will jump to over 30 millions pounds this year in Canada alone, and by 1960 it could zoom over the 50 million pound mark. The 1957 estimate is a 30% increase over last year.

With an eye on the ever expanding polyethylene pace, chemical manufacturers in Canada and in the U. S. are planning multi-million dollar plant programs. Canadian Union Carbide's integrated Montreal East chemical and polyethylene plant came on stream recently with a capacity of some 22 million pounds of polyethylene annually. Plans are in hand for a further production boost. DuPont Co. of Canada (1956) which has purchased 500 acres at Sarnia, Ont., is believed to be planning manufacture of the plastic in that city. Dow Chemical of Canada has also been looking closely at the fast developing polyethylene picture but has no definite plans as yet.

One thing is certain, there'll be lots of ethylene available, the major raw material, in the Sarnia area once Imperial Oil's $28.5 million petrochemical plant comes on stream in 1958. Canadian Industries, Ltd., the first producer of polyethylene resin in Canada, is standing pat for the time being with present processing facilities at its $14 million Edmonton plant. It is a known fact that several of the major Canadian chemical companies are watching closely the results of the first large-scale low-pressure polyethylene projects in the U. S.

► In reply to questions received as a result of a recent article in the press, the Polymer Corp. stated that there had been no change regarding its plans to build a butadiene plant near Red Deer, Alberta. It was emphasized that Polymer cannot fully finalize its Western butadiene project until the volume build-up through Trans Canada Pipe lines is better known.

The article suggested that Polymer might build a large new butadiene plant in Sarnia and would abandon its plans for Western Canada. It was pointed out that such a suggestion is completely without foundation. Polymer is currently proceeding with certain changes in its Sarnia butadiene facilities. These changes are being made in order to receive butylenes from the Imperial Oil petrochemical plant when it starts operations in the second half of 1958. Polymer will receive these butylenes under a long term contract entered into with Imperial Oil last year. The principal change required to receive this material involves added facilities for the purification of butadiene.

► "To provide a benchmark for measuring future developments" in some of its products, the Borden Chemical Co. (Canada), Ltd., sealed samples and formulae of the products in the cornerstone of its new $400,000 plant in West Hill, a suburb of Toronto. Nine of Borden's own products will be used in the building of the plant, said Gerald J. Ray, president of the company, which produces adhesives, coatings and other compounds.

The new Borden plant will be housed in a 17,000-square-foot building. It is being erected on a 10-acre site, and will consist of a main floor and mezzanine. In addition to manufacturing facilities, the plant will house a laboratory and offices. When completed this Fall, the new plant will produce adhesives and coatings for paper converting and other uses; textile and carpet backings and adhesives; and such "maintenance materials" as undercoating for cars, and asphalt emulsions and cutbacks for driveways.

► A steadily higher trend in the rubber market has taken quite a number of people in the trade by surprise over the past few weeks. While spectacular gyrations in such commodities as wool and cocoa have captured all the attention, rubber prices have improved by better than a cent a pound since early May. The nearby September futures contract, long static around the 31 to 32 cents a pound mark, is now quoted just over 33 cents.

Canadian dealers attribute the rise almost entirely to speculative buying in New York, with lack of volume in producer offerings from Indonesia, a contributory factor. They say that recent buying hasn't been followed through by manufacturers. "Akron's just nibbling," said one trade source. Lack of manufacturer interest indicates that the largest single market for rubber—the auto industry—hasn't come up to expectations, with auto sales lagging in the U. S.

► Badger Manufacturing Co., Cambridge, Mass., has announced that it has established the Canadian Badger Co., Ltd., for the purpose of engaging in the design and construction of oil refining, chemical, pharmaceutical, ore processing and paper-manufacturing plants in Canada. The present address of the new company is 25 King St., W., Toronto, Ont. The officers and directors of this company are John C. Starr, president and director; Adrian J. Broggini and William C. Rousseau, directors. Mr. Starr was born in Canada and attended McGill University and the Massachusetts Institute of Technology. He is also vice-president in charge of engineering and construction for the parent company. This new undertaking marks the sixth facility for Badger.

► Cabot Carbon of Canada has just completed a major expansion at its Sarnia, Ont. carbon black plant boosting capacity to 55 million pounds annually. The company started with a capacity of 25 million pounds back in 1952. Cabot Carbon produces three basic rubber grades of carbon black and supplies virtually all of the domestic market requirements for these grades. Approximately 80% of Cabot Carbon's output goes to tire manufacturers; the rest to manufacturers of mechanical goods and footwear.

J. Michael Billane

Takes Presidential Post

► J. Michael Billane has assumed the office of president and treasurer of the Dunlop Tire & Rubber Corp., Buffalo, N. Y., succeeding Glenn H. Crawford, who has retired for reasons of health. Mr. Crawford, with Dunlop since 1927, continues with the company as director and consultant. Mr. Billane joined Dunlop in England in April, 1928 in the Foreign Department and went to India in a sales capacity in 1934. From 1934 to 1940, Mr. Billane was office manager in Calcutta, district manager in Burma and district manager in South India. He served in the Royal Air Force in the Middle East and Western Desert from February, 1941 to June, 1946 on Fighter Control and Air Staff Operations duties, emerging with the rank of squadron leader. After his war service was completed, Mr. Billane became sales manager. In 1947, he returned to the head office in London as manager of the Commercial Relations Department, Tire Export, in 1948 and Overseas Sales Manager from 1949 to May, 1957. Mr. Billane was a local director of Fort Dunlop, England, as well as the Foam, Footwear and General Rubber Goods Division and has visited Dunlop markets the world over.

Releases Safety Data Sheet

► National Safety Council, Chicago, Ill., has published a new data sheet entitled "Guarding Calender Roll Bites." The data sheet deals with hazards of calender roll bites and guarding methods. Methods of protection are described and illustrated and accident prevention factors analyzed.

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Obituaries

Donald A. Comes

► Donald Arthur Comes, vice-president and general sales manager of Farrel-Birmingham Co., Inc., Ansonia, Conn., died suddenly of a heart attack at his home in Woodbridge, Conn., on July 14. He was 62 years old. Born in Hackensack, N. J., Mr. Comes became associated with Farrel-Birmingham in 1922 as a sales representative in the New Jersey territory. He was

particularly active in developing the use of Banbury mixers in the rubber, plastics, linoleum, paint and other industries. In 1943, Mr. Comes was transferred to the Farrel-Birmingham main office at Ansonia as manager of the Banbury Mixer Department. He was promoted to assistant general sales manager in 1946 and in 1953, he was named general sales manager. He was elected vice-president in 1954. Surviving are his wife and two sons.

Robert P. Masland

► Robert Paul Masland, first vice-president of C. H. Masland Sons, a carpet manufacturing concern, died on July 21 at Carlisle Hospital in Carlisle, Penna., after a long illness. He was 59 years old. Mr. Masland joined C. H. Masland, founded by his grandfather, in 1919. He became treasurer of the company in 1930 and secretary in 1948. Seven years later, Mr. Masland was named first vice-president and chairman of the finance committee. He was also vice-president and a director of the Masland Duraleather Co., Philadelphia, Penna.; treasurer and a director of the Amber Realty Co., Philadelphia, Penna., and a director of the Dauphin Deposit Trust Co., Harrisburg, Penna. Mr. Masland was born in Philadelphia and attended Dickinson College, graduating in 1919. During World War I, he served with the Navy. He was a member of the Dickinson College Athletic Society and of the Racquet and Union League Clubs of Philadelphia. Surviving are his wife, three sons and a daughter.

Howard A. Swearingen

► Howard A. Swearingen, president of the Aluminum Flake Co., Akron, Ohio, died on July 10 at Fairview Park Hospital, Cleveland, Ohio. He was 63 years old. Born in Cleveland, Mr. Swearingen attended old Central High School there and became a Certified Public Accountant in 1915. That year he became associated with Aluminum Flake as company auditor. He was a partner in the accounting firm of Swearingen & Swearingen for 36 years. In 1945, he succeeded the late Francis Seiberling as president of Aluminum Flake, a post he held until his death.

Jacob Haber

► Jacob Haber, former Akron industrialist and realtor, died on June 4 in New Haven, Conn., after a year's illness. He was 86 years old. A native of Zanesville, Ohio, Mr. Haber helped to organize the Stein Double Cushion Tire Co. in East Akron in 1902. He was vice-president and general manager of the company, which was sold in 1913 to the Mohawk Rubber Co. Mr. Haber then became Mohawk sales manager and remained in this post for several years before he entered the real estate and building business.

Walter R. Anyan

► Walter R. Anyan, secretary of the New Jersey Zinc Co., New York, N. Y., died on July 25 at the Greenwich, Conn., Hospital. He was 60 years old. Mr. Anyan joined New Jersey Zinc in 1915 and became secretary of the organization in 1948. He was a graduate of Polytechnic Institute of Brooklyn. Mr. Anyan served on the board of the First Congregational Church of Old Greenwich, Conn.

Malcolm C. Stevens

► Malcolm C. Stevens, retired Akron manager of A. Schrader's Son of Brooklyn, N. Y., died on July 22 in Akron General Hospital after a heart attack. He was 78 years old. A graduate of the Fairfield Military Academy, Mr. Stevens joined the Firestone Tire & Rubber Co. in 1913. He joined the Schrader Division of the Scovill Manufacturing Co. as manager in 1927 and remained in that capacity until his retirement in 1950.

F. B. Williamson, Jr.

► F. B. Williamson, Jr., chairman of the board of the Goodall Rubber Co., Trenton, N. J., died of a heart attack on July 27 at his home near New Hope, Penna. He was 69 years old. Mr. Williamson, a former president of Goodall, joined the company in 1911. He became president in 1923.

Serugo Sues Goodrich

► Serugo Rubber Co., Akron, Ohio, has brought a damage suit for $532,000 against the B. F. Goodrich Co., also of Akron, on charges that Goodrich sold a defective rubber latex compound to Serugo in 1954 and as a result, Serugo's reputation, business profits and good will were damaged. Between 1950 and 1954, the company attorneys said, Serugo became one of the leading manufacturers of rubber playballs in the nation. In the early part of 1954, however, they told the court, Serugo began receiving complaints from customers about the discoloration, crystallization and bursting of the playballs upon inflation. During 1954 and 1955, the firm was required to accept from its customers the return of products that cost more than $32,000, the court was told. Denying the latex was faulty, Goodrich claimed that the company had not been called in to examine the product before it was processed by Serugo in the making of dip toys and beach balls. Because the sales agreement carried such specifications, Goodrich said the company felt it was not liable. The case is being heard in Cleveland Federal Court.

Major Expansions Underway

► Monsanto Chemical Co., Springfield, Mass., has begun two major expansions at its integrated petrochemical production facilities at Texas City, Texas. A 40 million pound increase in the rated capacity of the styrene monomer plant will be completed by June 1958 and a 12 million pound addition to the plant's acetylene capacity will be completed early in 1958. The new additions are the latest in a series planned to meet the growing demand for chemical raw materials by Monsanto's Plastics Division and the expanding plastics, synthetic rubber and chemical fibers industries. The expansion program at Texas City will result in an increased use of hydrocarbons and ammonia, basic raw materials produced by Monsanto's Lion Oil and Inorganic Chemicals Divisions. In May of this year, a multi-million dollar ethylene expansion was completed at Texas City. Facilities to increase acrylonitrile capacity to more than 100 million pounds, as well as a substantial addition to the company's polyethylene capacity are both on schedule.

European Firm Cost $6 Million

► More complete information has been disclosed regarding the recent acquisition of Englebert & Co., a European tire manufacturer, by the U. S. Rubber Co., New York, N. Y. According to current reports, U. S. Rubber acquired the European firm for stock and cash totaling over $6 million. A New York Stock Exchange listing application by U. S. Rubber shows the company acquired a 48.2% interest in Englebert, for which it gave 101,777 shares of U. S. Rubber common and $1,579,000 in cash. At a recent market price of around $45 a share for U. S. Rubber common, the shares issued in part payment for the Englebert stock would have a value of $4,579,965.

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Overseas

By Comtel-Reuter

London—The British Board of Trade has announced that imports of synthetic rubber into the United Kingdom in 1958 will be authorized up to the level of 80 thousand tons. Sixty thousand tons will consist of styrene rubber and the remainder of various special purpose rubbers. The figures, the same as those for the current year, are subject to review if requirements exceed these quantities.

Singapore—A subcommittee has been formed by member brokers and associate members of the Singapore Chamber of Commerce Rubber Association to frame concrete proposals on means of establishing and enforcing proper rules and procedures. The subcommittee was formed at a meeting of the SCCRA following the dissolution of the Singapore Rubber Brokers Association.

Hong Kong—The Chinese State Trade Organization in Canton has placed an order with the Union Oxide and Chemical Co., London, England, for 15 tons of formerly embargoed rubber accelerators. This was the third order placed by the Canton branch of the Chinese National Import and Export Corp. for rubber accelerators since Britain relaxed trade restrictions against Communist China a few weeks ago.

Paris—Societe de Caoutchouc Butyl (SOCABU) reports that its butyl rubber plant, now under construction at Port Jerome, near Le Havre, will go into production in the second half of 1958 with an initial output of 20,000 tons a year. Said to be the first plant of its kind to be built outside the United States, its production will meet French butyl rubber needs with a small surplus available for export.

Singapore—Recent shipment of 7,482 tons of Malayan rubber to the Soviet Union represented a routine purchase by that country on the Singapore market, rubber trade sources say. The sources claim that the Soviet periodically purchases on the Singapore market whenever empty "Iron Curtain" freighters are passing through this port.

Toyko—Japanese Geon Co. has announced that it will begin production of 8,500 tons of synthetic rubber annually in 1959. The Foreign Investment Council of the Finance Ministry has approved the company's plan for a technical tie-up with the B. F. Goodrich Co. for the manufacture of synthetic rubber. Production is expected to include acrylo nitrile fibre, high styrene rubber and latex as well as some special types of styrene rubbers.

Singapore—According to brokers, improved Continental demand and lower-than-anticipated arrivals from Indonesia are the main contributing causes to the steadiness of the Singapore rubber market. The group said that lower sheets and remills were becoming more and more difficult to obtain.

Madrid—Newmaticos Michelin, a Spanish company, has been granted two licenses for the export of some 34,000 motor car tires to Morocco, according to the information bulletin of the Spanish Ministry of Commerce.

West Germany—Capital of Bunawerke Huels has been increased from 120,000 marks to 42 million marks, according to a management announcement. The company's production installations are now under construction and are expected to be between 45,000 tons and 50,000 tons of synthetic rubber, slightly more than a quarter of total West German requirements for rubber.

Kuala Lumpur—The Malayan Government has decided to lift all restrictions on the export of rubber to Communist China, according to the Minister for Commerce and Industry. He said that since the embargo on the export of rubber to China was lifted conditionally in June last year, 8,750 tons of rubber have been exported to China.

Singapore—Dr. Horst B. K. Geuting, a German agriculture and economic expert, has predicted that Malaya, with its well developed rubber industry, will progress to become the leading rubber producing country in the world within a few years. He placed Indonesia as the second largest rubber producer followed by Indochina and Thailand.

Colombo—The Chinese Government has expressed its intention of paying to Ceylon in Sterling the balance of about 60 million rupees, which represents the excess of the value of Malaya's exports of rubber to China over her imports of rice from that country. The Chinese Minister of Commerce and Trade said settlement of the balance due on the 1957 account would be discussed in Peking at the time of negotiations for renewal of the Ceylon-China Barter Deal.

Paris—A sharp rise in European petrochemical production and investments over the next few years has been predicted by the Petrochemical Working Party of the Chemical Products Committee of the Organization for European Economic Cooperation. Output is expected to reach nearly 580 thousand tons this year and over 1.2 million tons in 1960.

Brussels—Exchange reforms recently announced by the Indonesian Government should prove satisfactory to most companies with rubber and mineral interests in the country, the chairman of the Societe Financieres des Caoutchoucs told the group at its annual meeting. He said that while the measures would increase the price of imports and the cost of transferring profits, they would make possible larger transfers to Europe.

Kuala Lumpur—Following a decision of the International Rubber Study Group meeting, held in Jogjakarta, recently, Malaya is to investigate causes of rubber price fluctuation. The results of the study will be conveyed to the group at its next meeting.

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Bulk Density	*18-22 lbs.*
Moisture	*Nil*
MGO (Ignited Basis)	*97.9%*
Chlorides	*Nil*
Activity	*Moderate*

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New Goods

Rubber Drain Connector

► A core molded rubber drain connector has been developed by the Industrial Products Division of the Sun Rubber Co., Barberton, Ohio, for use in the new 1957 Hotpoint washer-drier. The rubber drain connector is said to be capable of flexing in all directions while the washer-drier is in operation without kinking or pulling loose from either end of its connection. It has a bellows-

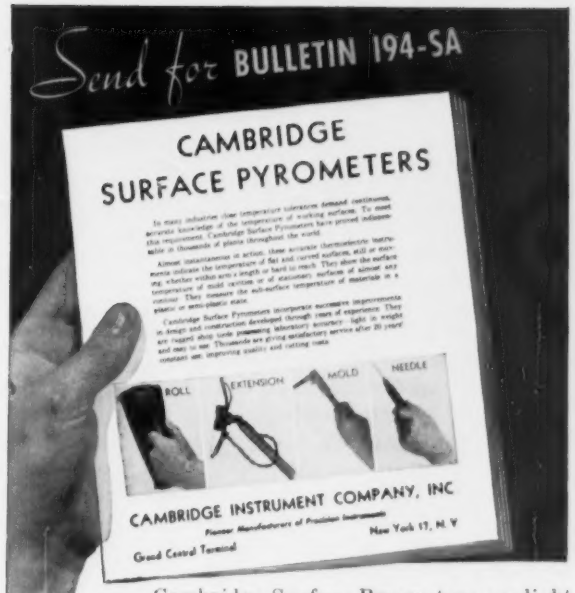
type convoluted section capable of an extension and compression motion in all three dimensional planes. The connector is made from a special blend of natural and synthetic rubber which is highly resistant to detergents, hot water, grease and oil. Because of the compound motion the part encounters when the washer-drier is in operation, the rubber has been compounded to resist aging and ozone and also has good freezing properties, according to the company.

U. S. Army Geodesic Tent

► U. S. Army has unveiled a nylon geodesic catenary tent at the Detroit Arsenal as an example of semi-permanent construction for military storage. The tent consists of two parts, a geodesic structure frame made of aluminum alloy tubing and the dome, made of coated Welkote, a Wellington Sears filament nylon base fabric specifically engineered for vinyl and neoprene coating. Coated by Domestic Film Products Corp., Millersburg, Ohio, with a virgin polyvinyl chloride compound designed for outdoor weather resistance, translucency and suitability for electric welding, the finished 14-ounce material has a tensile strength of 250 pounds, per inch of width. With a total frameweight of 1350 pounds and fabric weight of 325 pounds, the geodesic tent has a weight of 1.24 pounds per square foot of floor space. Advantages of the geodesic catenary tent are said to be extremely low pounds-per square-foot of floor area, simplified erection, strength, weather resistance, lightness, etc.

► Goodyear Tire & Rubber Co., Akron, Ohio, has introduced a steam hose designed for use by oil refineries. Covered with neoprene rubber which is oil, weather and age resistant, the hose is called "Flexsteel 150 Refinery". The new hose is being manufactured with a steel wire braid in three sizes; ½, ¾ and 1 inch inside diameters. It was designed for saturated steam maximum working pressure of 150 pounds.

Send for BULLETIN 194-SA



Cambridge Surface Pyrometers are light weight, portable instruments—accurate but rugged—for measuring temperature of mold cavities and flat surfaces, still or moving rolls, and within-the-mass temperature of materials in a plastic or semi-plastic state. Write for Bulletin 194-SA; 33 illustrations, many plastic applications.

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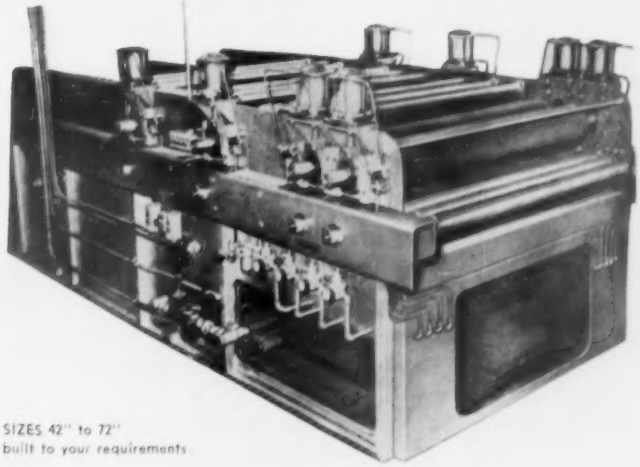

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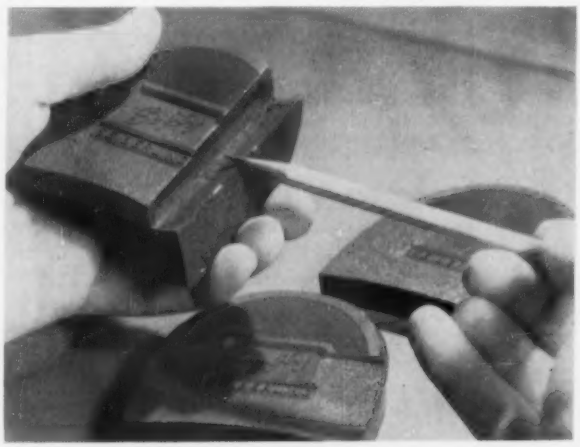
Five New Gasketing Materials

► Five new high density fiber gasketing materials that are said to make it possible to obtain seals at lower flange pressures have been developed by the Industrial Division of the Armstrong Cork Co., Lancaster, Penna. The new materials enable the company to offer a more complete line in the Accopac series, a recently developed group of gasketing materials that have more flexibility, dimensional stability and uniformity than conventional fiber gaskets, the company says. The new materials include: "AS-460 Asbestos Accopac"—82 pound density, seals at pressures of 2,000 psi, performs satisfactorily in flanges at 500° F., excellent torque retention, GR-S synthetic rubber binder. "AD-870 Asbestos Accopac"—82 pound density, seals at pressures of 2,000 psi, performs satisfactorily in flanges at 500° F., excellent torque retention, neoprene rubber binder. "AN-890 Asbestos Accopac"—82 pound density, seals at flange pressures between 1,500-2,000 psi, performs satisfactorily at 500° F., excellent torque retention, nitrile rubber binder. "CN-808 Accopac"—60 pound density, seals at 800 psi, combination of cellulose fiber, cork and nitrile rubber makes it possible to maintain unusually close tolerances on gauge, especially applicable in such industrial applications as carburators and gas container instruments. "N-840 Accopac"—78 pound density, seals as low as 1,500 psi, an impervious structure designed primarily for heavy duty service where compressibility must be at a minimum and bolt torque must be retained such as in automatic transmissions.

Rubber And Plastic Heel

► Seiberling Rubber Co., Akron, Ohio, has introduced a new type rubber heel with a core of hard but flexible plastic for men's shoes. The new heel, trademarked "Softy," has been in development for years and is said



to be the first successful product of its type as well as the first to be marketed nationally. Designed to grip nails securely when the heel is applied to a shoe, the plastic insert is moisture-resistant, according to Seiberling.

Maggie's DCIsion:

Everyone gets burned up at times—but there is no use letting your Neoprene get in the act. Even if you and the weather are scorching. Keep your stocks from burning with D C I Light Magnesium Oxide. Give us a call to save your money —and your disposition. Write for *NEW*, complete catalog.

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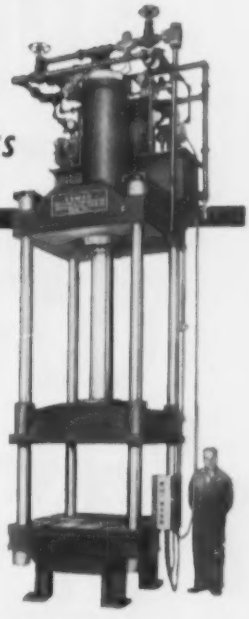

EEMCO designers and builders offer you the advantage of having complete installations for reinforced plastics molding —including presses, hydraulic units, preform machines, roving cutters and ovens. Why not consult EEMCO and ask for quotations on any complete or partial fiberglass molding installations?

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Vinyl Wire Jacketing

► A new vinyl jacketing material has been developed by the B. F. Goodrich Chemical Co., Cleveland, Ohio, for use in telephone cords that will not twist and tangle. A special Geon polyvinyl material is extruded directly on the conductors, which are insulated with another Geon compound—Geon 8818. The cord is then wound

around a mandrel and subjected to heat. When cooled, the cord is "set" in a coil, which is retained through countless flexings, according to the company. The new cord, jacketed with Geon 81576, may be used as power or control wiring on machines or equipment where flexing action is required. The material is said to have excellent electrical, abrasion and wear properties as well as resistance to attack by oil, water and chemicals.

Develops Ribbed Matting

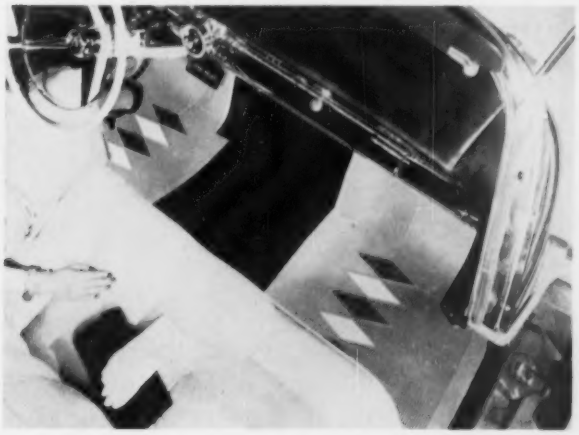
► An extruded polyethylene ribbed matting with numerous consumer applications has been developed by the Chemical Division of the Borden Co., 350 Madison Ave., New York, N. Y. Designated "Perma-Mat," the transparent plastic is said to be a tough, economical, nonskid material, which is expected to replace conventional rubber matting in many instances. The material can be cut with ordinary scissors and is reversible. The product may be used as hallway runners, stair runners, drainboard coverings, shelf mats, place mats, automobile floor mats and similar applications. Perma-Mat is available in rolls 30 inches wide and 6, 50 and 100 feet long, the company states.

Protector Collective Hose

► Dayton Rubber Co., Dayton, Ohio, has announced that a hose used during World War II to permit pilots to breathe in high altitudes, is now finding use as protection for tank crews against gas and poison attacks. The product, designated "Protector Collective Hose", is a refinement of the flexible oxygen tubing developed for pilots. In the new application, each crew member in an armored vehicle has a hose connected to a central decontaminator.

Custom Stylemaster Kar-Rug

► Wooster Rubber Co., Wooster, Ohio, has introduced a new car mat called the "Custom Stylemaster Kar-Rug", a refinement of the Stylemaster auto rug introduced nationally two years ago. The new product provides car floor protection for the front passenger side and the driver's side. The new mats also have a new raised



ribbing design which stops dirt and water from draining on to the car floor and allows easy cleaning. Designed with five diamond inserts in contrasting colors on each mat, Custom Stylemasters are produced in seven different colors, each trimmed with two additional colors. The colors are blue, green, grey, red, white, brown and black. A new undersurface design prevents slippage.

RHH-RHW Wire and Cable

► National Electric Products Corp., Pittsburgh, Penna., has introduced a new type RHH 90°C-RHW 75°C heat and moisture resistant, rubber insulated and fibrous covered wire and cable. Designed for general use in wet or dry locations, Type RHH-RHW wire and cable is included in the 1956 National Electrical Code. It is listed by Underwriters Laboratories, Inc. for 600 volt service in sizes 14 through 6 AWG. The insulation is "Nepcozone Butyl", developed by National Electric for high voltage cable where ozone and corona resistant properties are desired. Carrying dual rating, the new wire and cable product is marked to indicate its use as Type RHW 75° as well as RHH 90°C. It is being produced in quantity with the company's standard "mark and measure" designations every two feet to permit simplified measurements. National Electric's factory engineering and field service staffs are available for consultation pertaining to applications of the new wire and cable.

Information submitted for the 1957-58 RUBBER RED BOOK may still be amended. Write us today giving latest data!

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tester with
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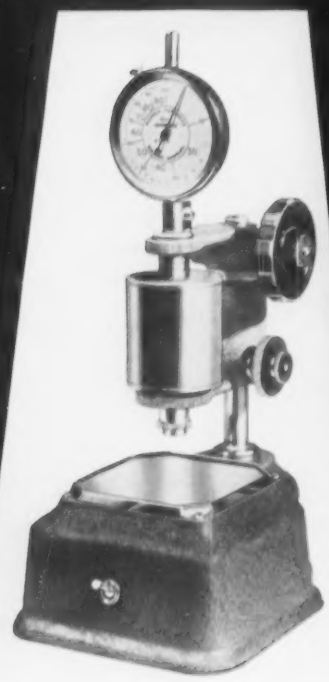

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New Equipment

Shore Maximum Reading Durometer

► The Shore Instrument & Mfg. Co., 90-35 Van Wyck Expressway, Jamaica 35, N. Y., manufactures the Shore Maximum Reading Durometer, which measures the cold flow or creep of rubber and other elastomeric materials. The instrument, which is a modification of the company's Type A-2 Durometer, possesses both a driving hand and a maximum hand. When applied to the test specimen,

both hands move in tandem. After indicating the hardness of the specimen, the driving hand recedes proportionate to the extent of cold flow or creep in the specimen, while the maximum hand remains fixed at the maximum reading attained. This permits the recording of both the maximum reading and the reading yielded by the driving hand after a stated time interval, usually ten to thirty seconds.

The Maximum Reading Durometer may be used free-hand or on an operating stand. When used free-hand, it is ideally suited to testing round surfaces, such as rubber rollers. Use of the operating stand facilitates absolutely flush contact between the instrument and the specimen and control of the speed of application. If the material being tested has little or no creep, the maximum hand can be temporarily eliminated by applying the instrument to a flat impenetrable surface, which will move the hand out of the way at the top of the scale. The user then can proceed to test the material, observing only the driving hand in the process.

► The Fawick **magnetic clutch,** a product of Fawick Corp., 9919 Clinton Road, Cleveland 11, Ohio, has patented design features which include comparatively short axial and small radial dimensions, complete isolation of the magnetic assembly from integral mechanical parts, and compact precision assembly of all component parts. It is furnished in stationary field or brush types and for either wet or dry operation. Sizes range from 2 to 13 inches.

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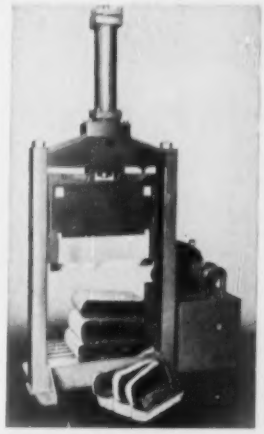
RUBBER BALE CUTTER



A moderately priced machine, simple in design and economical in operation, that fully meets all requirements. Hydraulically operated and completely self-contained. The heavy-duty knife will cut a full 29-inch width (opening is 23 inches high). Bales can be cut to minimum 1-inch slabs. Bales are easily advanced for cutting as they rest on ball-bearing rollers. Only one operator is required and built-in controls provide safe operation.

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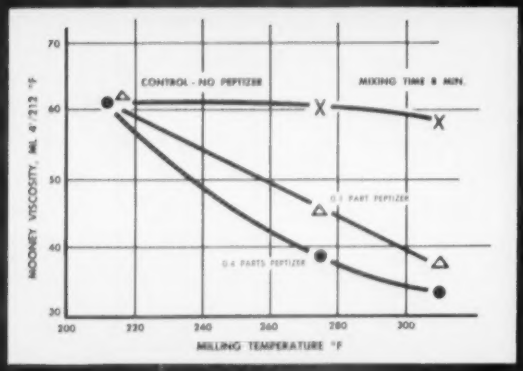
The plot immediately below is illustrative of the high activity of PITT-CONSOL Peptizer "640" in natural rubber . . .



PITT-CONSOL Peptizers "620" and "640" have no deleterious effects on the compounded or cured properties—on rate of cure —or on age resistance.

We would be pleased to discuss these new products with you. Technical service, samples and data sheets are available.

• By a leading producer of high purity cresylic acids.

PITT-CONSOL CHEMICALS

PITT-CONSOL CHEMICAL COMPANY

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Aminco-Chatten Grinder

► A laboratory grinding machine for preparing test specimens from rubber and other flexible products is now available from the American Instrument Co., 8030 Georgia Ave., Silver Spring, Md. The Aminco-Chatten Grinder for buffing rubber specimens in preparation for specific tests consists of a heavy-duty, double end, motor-driven grinder with two grinding wheels operating on

115-volt, 60-cycle, single phase current at 3450 rpm. The grinder is mounted on a roller stand which encloses a dust-collecting unit. The dust-collecting unit has a removable catch pan, and is equipped with replaceable air filters.

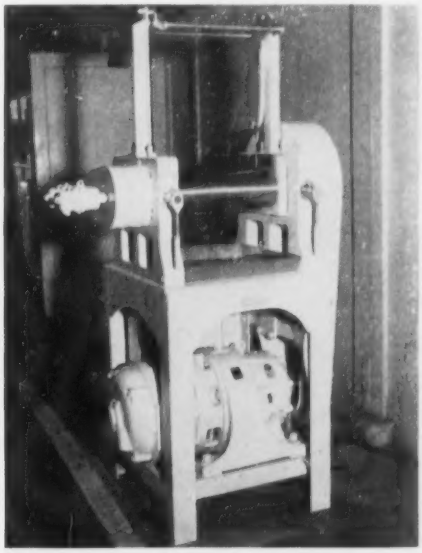
Opposite each grinding wheel is a bracket which carries a back-up roller, adjustable by means of a micrometer screw and dial (graduated in 0.001 inch) for the purpose of setting the desired gap between the face of the grinding wheel and the roller. This controls the thickness and uniformity of the ground specimen to a high degree of accuracy, says the manufacturer.

Each of the brackets which carry the back-up rollers have a dove-tail slot in the upper face for mounting a wheel dressing attachment. The grinding wheels are dressed before shipment. The grinder motor, dust-collector motor, and back-up rollers are mounted on grease sealed bearings. Course and fine grinding wheels for buffing straight or cylindrical pieces of rubber are available.

► The **Exacto rotary joint** is said to eliminate seizing or freezing on the roll. A product of Phillips Sales Co., P. O. Box 417, West New York, N. J., the rotary joint operates at steam pressures up to 250 psi with temperatures up to 500° F. and speeds up to 1000 rpm.

Todd Laboratory Mill

► The 6 x 16 inch laboratory mill produced by Todd Shipyards Corp., San Pedro, Calif., may be used for laboratory work and for processing small production lots of rubber or plastics compounds. The rolls are of forged steel with walls 1⅛ inches in thickness and with



journals 3¼ inches in diameter, which run in solid cast Meehanite bearing blocks with bronze bearings. The rolls operate at a friction ratio of 1.23 to 1. Speed of the back (fast) roll is 19.7 rpm. The mill is powered by a 7½ hp constant speed, squirrel cage, gear head motor. Power transmission is accomplished by means of a heavy-duty roller chain and sprockets which drive the back roll. A cradle-type safety switch is provided to stop the mill in case of emergency. Operating push buttons and safety switch are arranged for convenient operation from either front or back of the unit. Height of the mill is 58½ inches, width 37½ inches, and depth 29 inches.

Sinclair-Collins Control Valve

► A fully automatic 4,000-pound three-way two-pressure control valve, designed for automated control presses, plastic molding machines and similar equipment, has been announced by Sinclair-Collins Valve Co., 454 Morgan Ave., Akron, Ohio. Upon actuation, the new valve applies low pressure for fast, controlled closing of the press or machine. Then, triggered by a control timer interval or limit switch, the high pressure is applied. When processing is completed, the high pressure cuts off, the drain valve opens and the press or machine opens. The valve can be adjusted to provide any throttling speed in any position of the closing and/or opening strokes. An easily accessible, manually-operated safety control permits instant reversal at any point in the closing phase of the cycle.

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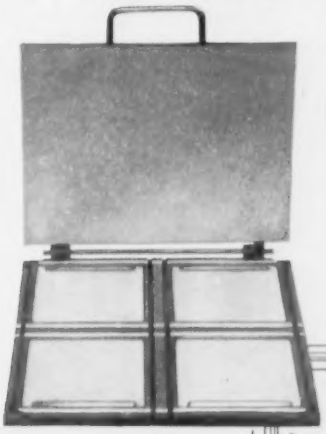
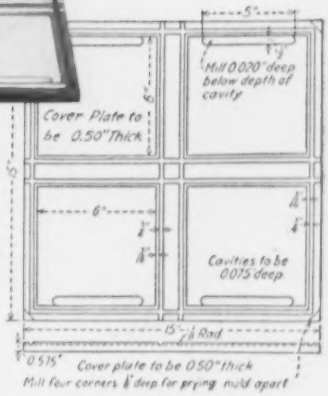
For Rubber Testing to ASTM Standards



Precision-Cut SLAB MOLDS


5"
Mill 0.020" deep below depth of cavity
Cover Plate to be 0.50" Thick
6"
Cavities to be 0.075 deep
15-⅞ Rad
0.515"
Cover plate to be 0.50" thick
Mill four corners ⅛" deep for prying mold apart

For making tensile test samples, we supply single and multicavity slab molds as shown, in plain or chrome finish, with or without handle and hinges. We usually stock molds for adhesion, abrasion, flexing, compression and rebound samples. Special molds promptly.

Dies for Cutting "Dumbbell" Tension Samples

These dies are milled out of steel blocks; edges carefully ground and specially hardened to cut vulcanized rubber. Entire die precision designed to ASTM standards. For machine use as shown, or with handle for hand operation. Also, hand-forged dies to cut regular or tear test samples.

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1" and 2" Centers

MALLET HANDLE DUMBBELL DIE

HOGGSON & PETTIS MANUFACTURING CO.
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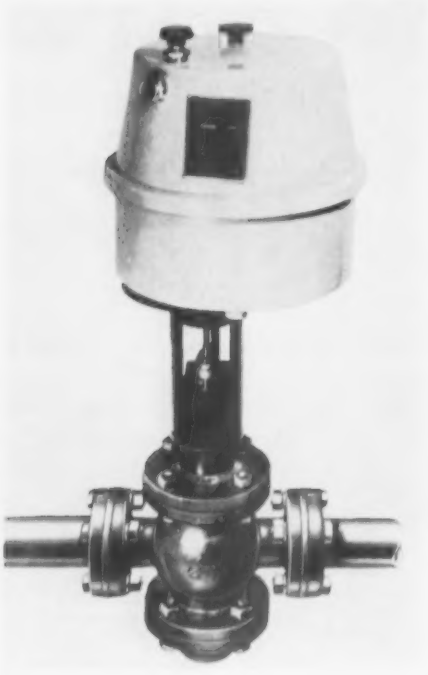
Askania Electro Hydraulic Valve Actuator

► A new electro hydraulic valve actuator has been added to the line of Askania Regulator Co., 240 East Ontario St., Chicago 11, Illinois. Designed to operate from signals supplied by commercially available con-



trollers or remote positioning devices, and also directly from the measuring element, the self-contained unit is used with valves with from ½ to 1½ inch full stroke which require less than 200 pounds thrust. Standard signal range is from 1 to 5, or from 4 to 8 milliamperes dc. For ac signals, an internal rectifier is supplied with the unit. Electrical connections comprise only two signal wires and two wires for power supply.

► A **temperature test chamber** which has ten cubic feet of work space has been announced by Tenney Engineering, Inc., Union, N. J. Called the Tenney Series Ten, it comes in four standard assemblies with low temperature ranges of —40°, —85°, —100° and —120° F., and high temperature ranges of 240° and 350° F. Optional relative humidity can be 20 to 100 per cent within certain limitations.

► A 2½-gallon pressurized **fire extinguisher** designed to kill rubber fires and prevent flashback is produced by the Fyr-Fyter Co., Dayton 1, Ohio. The extinguishing agent is Karbaloy, which is non-freezing and non-toxic. Advantages claimed for the unit are simple press-lever control, quick visual inspection of pressure gauge, stainless steel finish for reduced maintenance and easy installation in standard extinguisher cabinets.

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fundamentals of its science and technology

DR. JEAN LE BRAS
French Rubber Institute
translated by
IRENE E. BERCK, Ph.D.
Editor, Chemical Publishing Co., Inc.

460 pages • illustrated • 1957 • $12.00

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Reviews

BOOKS

Rubber: Fundamentals of Its Science and Technology. By Jean Le Bras. Translated by Irene E. Berck. Published by the Chemical Publishing Co., 212 Fifth Ave., New York 10, N. Y. 5½ x 8½ in. 464 pp. $12.00.

(Available from Book Department, RUBBER AGE)

The rubber manufacturing industry has long been in need of a text book, one which would serve not only the embryo rubber chemist but the experienced technologist and the practical chemist as well. This is the first book in the English language which answers that need. As indicated by Dr. Le Bras in his foreword, the scope, style and basic features of the book are largely determined by its purpose. It is written in a simple and direct style to make it interesting and easy to grasp. Complicated theoretical considerations, such as the reinforcement of rubber, are avoided, but the more important aspects, including the chemical structure of rubber and the theories of vulcanization, are discussed in considerable detail.

How extensively the book covers its ground is best indicated by the titles of its 15 chapters. These are: (1) General Aspects; (2) Sources and Preparation of Natural Rubber; (3) The Composition and Properties of Latex; (4) The Physical Properties of Rubber; (5) The Chemical Composition and Structure of Rubber; (6) The Chemical Properties of Rubber; (7) Vulcanization; (8) Compounding Ingredients and Their Application; (9) Processing of Rubber; (10) Direct Application of Latex; (11) Theoretical Aspects of Rubber Chemistry; (12) Synthetic Rubbers; (13) Analyses and Tests for Latex and Rubber; (14) Hard Rubber, Reclaimed Rubber and Chemical Rubber Derivatives; (15) Applications of Rubber. In addition, there is a general bibliography, a list of periodicals devoted to rubber, and a cross-reference subject index.

Actually, this book has been in the making for almost 16 years. It was back in 1941 when the French Rubber Institute asked Dr. Le Bras to organize a training course for rubber engineers and technicians. The course which was eventually conceived covered the fundamentals of the science and technology of rubber in the simplest and clearest possible style. Due to popular demand the course material was compiled and organized in book form and issued in a French edition in 1951, with a second edition in 1953. The American book is a translation of the 1953 edition with a good deal of new information added to bring it completely up-to-date. Dr. Berck's translation is amazingly accurate and a special effort was made to incorporate illustrations depicting the American counterparts of most of the European photographs. Some 190 illustrations are used.

This book is a welcome and needed addition to the technical literature of rubber. As Dr. H. F. Mark, director of the Polymer Research Institute, says in his preface: "The presentation is equally interesting and stimulating for the organic chemist who prepares new types of elastic macromolecules, for the physical chemist and physicist who is mainly interested in the correlation between structure and properties, and for the technologist who is concerned with the practical application of the products. They all will read the book with much profit and with thanks to the author for his thorough and skillful work."

Additions and corrections are still being accepted for the 1957-58 RUBBER RED BOOK. If you want to amend the data you have already submitted in order to make a complete and correct listing, write us today!

BOOKS

ASTM Standards on Rubber Products: 1957. Published by the American Society for Testing Materials, 1916 Race St., Philadelphia 3, Penna. 6 x 9 in. 832 pp. $5.25 (to members); $7.00 (to non-members).

Prepared by Committee D-11 on Rubber and Rubberlike Products, this publication is intended primarily to present in convenient form for laboratory use and reference the various standard and tentative methods of test and specifications pertaining to rubber products. Included also as information only are proposed methods which are published in draft form for the purpose of soliciting comments. In addition, the regulations governing Committee D-11 and a complete list of the personnel of the committee are appended.

The compilation contains 100 tests, 29 recommended practices, 6 definitions and 38 specifications. Of these, 32 are new or recently revised. Among the topics covered are: Processibility Tests; Chemical Tests of Vulcanized Rubber; Physical Tests of Vulcanized Rubber; Aging and Weathering Tests of Rubber; Low-Temperature Tests of Rubber; Synthetic Elastomers; Automotive and Aeronautical Rubber; Packing and Gasket Materials; Hose and Belting; Tape; Electrical Protective Equipment; Rubber-Coated Fabrics; Insulated Wire and Cable; Hard Rubber; Latex Foam; Sponge and Expanded Cellular Rubber; Rubber Adhesives; Crude Rubber; Rubber Latex; Nonrigid Plastics; Electrical Tests; Nomenclature and Definitions, and General Test Methods.

•

Automation: Its Purpose and Future. By Magnus Pyke. Published by Philosophical Library, Inc., 15 East 40th St., New York 16, N. Y. 5½ x 8¼ in. 192 pp. $10.00.

The present impact of automation on industry and the possible impact in the future on all mankind are carefully considered in this book. The author first reviews some of the new things that are already being done automatically, and then describes the principles of the digital computer and the way in which it was developed. Next he gives an account of "automation" in the mass-production industries and shows how the new computers can also be used to make special machine tools or the precisely constructed parts of aircraft. Then he discusses the rapid onrush of automatic systems in offices, banks, insurance companies and specific industries, including the petroleum and chemical fields. Finally, he discusses the factors affecting the speed with which "automation" is likely to spread in different countries. Dr. Pyke is not an expert on the electronic digital computer, but he does understand the language of technology. As he states in his preface: "I have tried to write down what seems to me to be happening and why I think it is urgent and important."

•

Organic Reactions: Volume IX. Edited by Roger Adams. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 6 x 9 in. 468 pp. $12.00.

The purpose of this series, which was started in 1942, is to provide a compilation of all the important synthetic chemical reactions. Each chapter in the series furnishes a comprehensive survey of a particular reaction and includes a general discussion of method, modifications, examples of applicability, special precautions, a detailed description of the procedure, expected yields, and other pertinent data. Volumes are issued as the data becomes available to the editor, with each chapter being provided by an outstanding expert in the field. The current volume treats with the cleavage of non-enolizable ketones with sodium amide, the Gattermann synthesis of aldehydes, the Baeyer-Villiger oxidation of aldehydes and ketones, the alkylation of esters and nitriles, the reaction of halogens with silver salts of carboxylic acids, the synthesis of beta-lactams, and the Pschorr synthesis and related diazonium ring closure reactions. A subject index is included.

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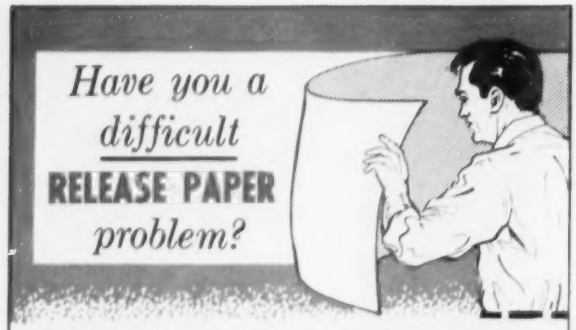

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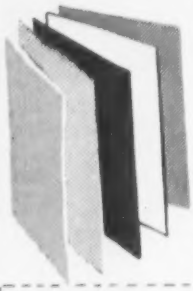

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REVIEWS (CONT'D)

BOOKLETS, CATALOGS, etc.

Symposium on Corona. (Special Technical Publication No. 198). Published by the American Society for Testing Materials, 1916 Race St., Philadelphia 3, Penna. 6 x 9 in. 32 pp. $1.00 (members); $1.25 (non-members).

Some time ago Committee D-9 on Electrical Insulating Materials initiated research and standardization of methods for corona detection and material evaluation in this field. One of the accomplishments of this work was a Symposium on Corona, the papers of which are included in this special publication. In addition to an introduction by E. B. Curdts, the report covers papers on preliminary corona resistance test results from IEC activities, effects of corona on plastic laminates, corona resistance test method for laminates and molded and cast materials, preliminary investigation of proposed pulse method for measuring ionization, corona detection and measurement at 60 cycles, and test methods for measuring energy in a gas discharge. The report should serve as a benchmark for future research and standardization in the field.

•

Enjay Butyl for Tires. Enjay Co., Inc., 15 West 51st St., New York 19, N. Y. 8½ x 11 in. 60 pp.

An objective and up-to-date account of the use of Enjay Butyl Rubber for automotive and heavy duty tires is presented in this loose-leaf publication. The manual includes extensive information on compounding, fabrication, and performance of butyl rubber tires. Subjects such as cord treatment, body ply, flipper, chafer, bead wrap, bead insulation, tread and sidewall, cure systems, tread wear, tire noise, winter traction, braking traction, power consumption, surface cracking and tire design are covered by descriptive material, tables, charts, and photos. An appendix covers tire component nomenclature, compounding ingredients, test specifications and procedures, evaluation of cure, and thermal diffusivity and conductivity. The use of color and artwork contributes to making this an unusually handsome publication.

•

Japan's Rubber Goods: 1957. Japan Rubber Manufacturers' Association, Bridgestone Building, Tokyo, Japan. 8¼ x 11¾ in. 80 pp.

The last edition of this combined statistical-directory manual was issued in 1955. The present edition has been brought up to date and contains information on recent developments and new rubber products. Statistics are furnished on the production in Japan of automobile tires, bicycle tires, footwear, belting, rubberized fabrics, toys, foam rubber, sporting goods, mechanical goods and a few miscellaneous items. Data are included on some 60 rubber manufacturers, presumably all members of the Japan Rubber Manufacturers' Association, with the type of products made and the chief officer indicated in each case. Well-illustrated and neatly designed, the manual is a comprehensive report on the progress of the rubber manufacturing industry in Japan.

•

Factors Affecting Quality in Polyethylene Extrusion. By B. H. Maddock. Bakelite Co., Division of Union Carbide Corp., 30 East 42nd St., New York 17, N. Y. 8½ x 11 in. 32 pp.

This report, based on a paper presented by the author at an S.P.E. meeting earlier this year, is primarily concerned with the contribution of the extruder toward product quality in the manufacture of polyethylene products. It treats with such subjects as dimensional uniformity, effect of screw design and operating conditions, effects of screw speed and screw temperature, mixing efficiency and a few other factors. According to the report, the pressure method of quality control offers advantages in the majority of applications, particularly in cases where a high resin temperature is desirable, as in flat film or sheeting and extrusion coating.

BOOKLETS, CATALOGS, etc.

New Look at Nitrile Rubber—Chemigum. Chemical Division, Goodyear Tire & Rubber Co., Akron 16, Ohio. 8½ x 11 in. 36 pp.

The inherent advantages of Chemigum as an engineering material are outlined and emphasized in this booklet, which was designed to aid in gauging the suitability of the various rubbers for specific applications. The resistance of typical Chemigum compounds to chemicals, oils and solvents, permeation, heat, cold, abrasion and creep is dealt with in separate sections, each section being accompanied by a typical application. The use of multi-color illustrations considerably enhances the text. Brief information on calendering, extruding, transfer and injection molding, compression molding and solution processing is included. Other information of value to design engineers is also furnished.

•

Diamond Precipitated Calcium Carbonates for Polyvinyl Chloride Applications. Diamond Alkali Co., 300 Union Commerce Building, Cleveland 14, Ohio. 8½ x 11 in. 16 pp.

This brochure briefly reviews the use of eight Diamond chemicals as inert fillers for compounding polyvinyl chloride plastic products. It presents data on such subjects as filler requirements, plant processing considerations, physical properties of vinyl compounds, basic stock formulations and plasticizers. Tables supply information on plasticizer efficiency factors, filled stocks, and filler adjustment factors in PVC 50. A compendium of primary applications and principal properties of Diamond precipitated calcium carbonates, and graphs covering tensile, modulus and hardness factors of unfilled and filled stocks, complete the presentation.

•

Goodrich Industrial Tires and Wheels. B. F. Goodrich Tire Co., Akron, Ohio. 8⅜ x 10¾ in. 36 pp.

This guide book explains the various phases of industrial tire use. It gives specifications for all types of industrial tires, and describes (1) the complete Goodrich line, which includes, among others, solid tires, pneumatics, semi-pneumatics and vulcanized-on-wheel tires; (2) the use of each type industrial tire; (3) the variations in pneumatic tire capacities at various speeds; (4) the wheel and caster combinations which are available; (5) the latest available truck manufacturers' tire specifications, and (6) how to change steel wheels to rubber-tired wheels in three easy steps. Extensive information on industrial tires is presented in an easily comprehended manner.

•

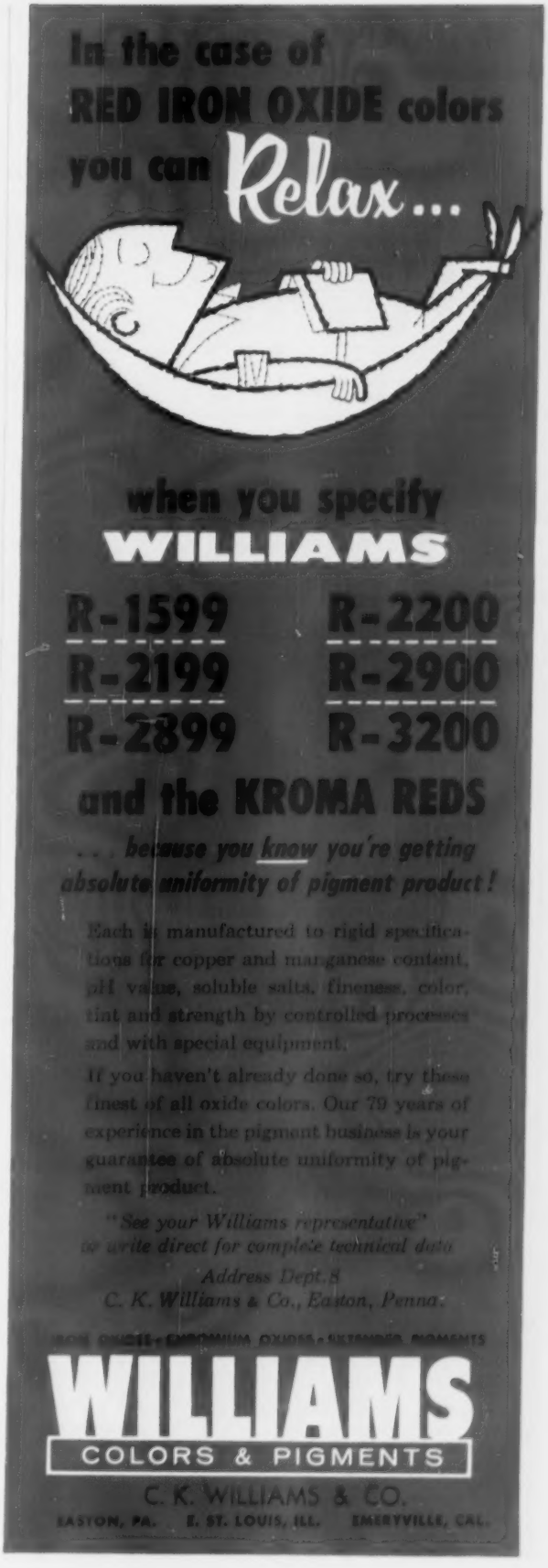
Changing Patterns and Concepts in Management. (General Management Series No. 182). American Management Association, 1515 Broadway, New York 36, N. Y. 6 x 9 in. 56 pp. $1.75.

To clarify new trends in management thinking brought about by changing methods of operation, this publication presents a theory of management based on the integration of motivation research with existing theories of scientific management. Also included are reports on organization planning which deal with the human element in successful management. A concluding paper surveys the prospects for management growth in the next ten years.

•

Allis-Chalmers AC Motor Starters and Contactors. (Bulletin No. 14-B-8615). Allis-Chalmers Manufacturing Co., Milwaukee 1, Wisconsin. 8¼ x 11 in. 12 pp.

The complete Allis-Chalmers line of type 425 motor starters and contactors in sizes 4, 5 and 6 is described in this bulletin. The instruments can be applied to practically all types of drives, including pumps, crushers, blowers, fans, screen and furnace controls. The various units are illustrated with photographs.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MARKET REPORTS

TRENDS
NEWS
PRICES

Natural Rubber

Since our last report (July 1), the price of spot rubber on the New York Commodity Exchange has moved in a range of 75 points, high for the period being 33.13c reached on July 9 and 15, and low being 32.38c reached on July 30 and 31. The average price of spot rubber for the month of July was 32.88c based on 22 trading days. This compares with 32.80c in the previous month.

The trade reports that the market seems to have hit "dead center." Prices have barely changed in some weeks. There has been an extremely stable rubber market most of this year, unequaled since last summer. Many in the trade recall the early part of 1955 when prices behaved remarkably similar to the manner in which they are performing now.

Situation in 1955 Market

In January, 1955, prices rose from about 30c to 35c, and then they fell rapidly to about 28c. From March through May, prices gradually recovered to about a 31c level. From this point, however, they soared to a 50c level when a very large boom in world consumption occurred.

A repetition of the 1955 situation is not necessarily indicated. Many recall, however, that prices at the start of this year were at the 38c level. Prices then tapered off to below 30c, and then recovered slowly to a 32-33c level, where they are now hovering.

The comparison between 1955 and 1957 with regard to prices is also matched with regard to open interest and trading volume. In 1955, open interest declined from around 1,300 lots, though not appreciably during the price stability period. At the point where futures began their sharp upturn, open interest had grown to 1,500 lots, and at the top it hit 2,500. Volume, which during the decline (January, 1955) was around 150 sales daily, barely averaged 100 lots during the stability-recovery period, but soared to around 200 or more lots a day during the uptrend.

Now in 1957, open interest started at about 1,900 lots. Near the price low in February, it was below 800, and almost reached 600 as recovery got underway this spring. It is now almost 1,000 lots. Volume, which averaged around 200 lots daily in the decline, steadied at less than 100 during the stability period, and recently has been averaging just slightly higher.

Similar Situation Today

Today's statistical position appears to be little different from that of two years ago, except for added synthetic rubber capacity. Even so, world supplies of either rubber are practically identical in terms of the previous 12 months' usage. It is true that if history were to repeat in even a moderate way, there must be more incentive than now foreseen. That is to say, if it is felt that automobile production will reach new highs in 1958, futures will be in somewhat of a position like that of June, 1955. Another factor will be the extent of buying by the Soviet bloc and by Red China in coming months.

NEW YORK, AUGUST 1, 1957

Price Data

Closing Rubber Prices on New York Commodity Exchange

FROM JULY 1 TO JULY 31

July	Spot	July	Sept.	Nov.	Jan.	Sales
1	32.63	32.65	32.26	32.10	31.90	36
2	32.88	32.90	32.30	32.15	31.95	70
3	33.00	33.05	32.37	32.12	32.00	57
4	....	....	....	....	....	...
5	32.63	32.70	32.20	31.90	31.70	44
6	....	....	....	....	....	...
7	....	....	....	....	....	...
8	32.88	32.90	32.45	32.25	32.10	89
9	33.13	33.05	32.75	32.55	32.40	135
10	33.00	32.95	32.70	32.45	32.30	11
11	33.00	32.90	32.65	32.40	32.25	87
12	33.00	32.85	32.60	32.40	32.25	49
13	....	....	....	....	....	...
14	....	....	....	....	....	...
15	33.13	33.10	32.85	32.71	32.62	155
16	33.00	33.15	32.80	32.66	32.56	79
17	32.63	32.90	32.50	32.50	32.35	92
18	32.63	32.95	32.60	32.55	32.40	15
19	33.88	32.95	32.70	32.55	32.45	36
20	....	....	....	....	....	...
21	....	....	....	....	....	...
22	32.88	32.98	32.63	32.54	32.49	80
23	32.88	33.00	32.65	32.60	32.50	83
24	33.00	33.15	32.70	32.60	32.55	67
25	32.88	33.25	32.65	32.55	32.45	50
26	32.88	32.40	32.60	32.45	32.38	86
27	....	....	....	....	....	...
28	....	....	....	....	....	...
29	32.75	33.50	32.50	32.35	32.30	93
30	32.38	32.15	32.01	32.05	32.00	135
31	32.38	32.25	32.15	32.10	32.05	69

Outside Market

No. 1 Ribbed Smoked Sheets:	
Spot	.32¾
Aug.	.32⅛
Sept.	.32⅜
Thin Latex Crepe:	
Spot	.34⅝
Thin Brown Crepe, No. 2	.28⅞
Flat Bark Crepe	.21½

London Market
(Standard Smoked Sheets)

Sept.	31.33 - 31.62
Oct.-Dec.	31.62 - 31.91

Singapore Market
(Standard Smoked Sheets)

Aug.	29.78 - 29.86

Middling Upland Quotations

	July 1	July 31		
	Close	High	Low	Close
Oct.	35.28	34.52	34.37	34.43
Dec.	35.19	34.50	34.32	34.43
Mar.	35.50	34.51	34.33	34.47

Notes & Quotes

Research is the most constructive and also the most destructive force in the world today, according to J. Earl Gulick, vice-president in charge of manufacturing of the B. F. Goodrich Co. In an address before the Ravenna, Ohio, Chamber of Commerce, Mr. Gulick stated "there is no force as deadly to an established business as industrial research. Nothing can destroy a business so completely and irrevocably as a new and better product in the hands of a competitor." He said that there are countless examples of well-established businesses that have gone into bankruptcy because research by a competitor made their products obsolete. This technological loss, he declared, is directly chargeable to those in management who fail to institute adequate research programs.

Synthetic Rubber

According to the Rubber Manufacturers Association, consumption of synthetic rubber in the United States during May amounted to 79,710 long tons, establishing the highest ratio to total new rubber used for any monthly period when the use of new rubber was not under government specification control. This ratio was 63.25 per cent of the 126,029 long tons of new rubber consumed during the month.

To support synthetic use, American producers set a new all-time monthly high by turning out 95,049 long tons of all types of synthetic rubbers. The previous record was 94,389 long tons produced in March, 1956.

For comparison purposes, consumption of new rubber in April amounted to 121,193 long tons. Consumption of all types of synthetic rubber in April totaled 76,121 long tons. Synthetic rubber's portion of total rubber consumed was 62.81 per cent in April, and 62.64 per cent in the first five months of 1957. A total of 82,340 long tons of synthetic rubber were produced in April.

Comparison With Previous Year

It will be remembered that in 1956, a total of 876,982 long tons of styrene rubber was produced in the United States. In the first five months of this year, 359,803 long tons were produced, for a monthly average of about 72,000 long tons. With these figures in hand, we can estimate a total production of about 865,000 long tons of styrene rubbers in 1957, or about 10,000 long tons less than in the previous year.

By the same token, it should be noted that 727,789 long tons of styrene rubber were consumed in the United States in 1956, some 14,000 long tons less than in the previous year. Statistics for the first five months of the current year place consumption at 332,619 long tons, or about 67,000 long tons a month. In extending these figures, we find that about 804,000 long tons of styrene rubber may be consumed this year.

It will thus be seen that while production of styrene rubber in 1957 can reasonably be expected to fall slightly below the previous year's level, consumption of styrene rubber in 1957 may exceed the previous year's figure by some 77,000 long tons.

Where the Extra Rubber?

Since imports do not play a major role in the new supply of styrene rubber, the additional rubber needed to make up the gap between production and consumption can only come from stocks. As of the end of May, there were 121,931 long tons of styrene rubber on hand, while at the end of 1956, there were 151,763 long tons in stocks.

It is readily apparent, therefore, that in the first five months of the current year, stocks have been reduced by some 30,000 long tons, a considerable sum to be sure, averaging about 6,000 tons a month. If this stock reduction rate continues, stocks at year end should total 100,000 long tons, thus tying together all the projected figures.

MAKE THE RIGHT DECISION

. . . Cyanamid MBTS Dustless Powder!

There's no need to accept dust as a problem in handling accelerators. Cyanamid's MBTS Dustless has dust licked with no sacrifice in accelerator efficiency. Here's why:

★ New production facilities at Cyanamid's MBTS plant minimize the extra-fine dust-causing particles.

★ Uniform-sized MBTS particles are coated evenly with an efficient anti-dusting additive that keeps them in free-flowing and dust-free condition.

★ Cyanamid MBTS Dustless is higher in MBTS content than *any* other commercial benzothiazyldisulfide, giving you top value in economy and efficiency.

Eliminate dust problems . . . by simply specifying Cyanamid MBTS —or by asking your Cyanamid Rubber Chemicals representative for full information on this *optimum* form of benzothiazyldisulfide.

CYANAMID

AMERICAN CYANAMID COMPANY
RUBBER CHEMICALS DEPARTMENT
BOUND BROOK, NEW JERSEY

SALES REPRESENTATIVES AND WAREHOUSE STOCKS: Akron Chemical Company, Akron, Ohio • H. M. Royal, Inc., Trenton, N. J. • H. M. Royal, Inc., Los Angeles, Calif. Ernest Jacoby & Company, Inc., Boston, Mass. • Herron & Meyer of Chicago, Chicago, Illinois • In Canada: St. Lawrence Chemical Company, Ltd., Montreal and Toronto

PRICES OF COMMERCIALLY AVAILABLE SYNTHETIC RUBBER POLYMERS

(dry types—per pound carload unless otherwise specified)

Butadiene-Acrylonitrile Types

Butaprene NAA	.5400 [1]
Butaprene NF	.4900 [1]
Butaprene NL	.5000 [1]
Butaprene NXM	.5800 [1]
Chemigum N1	.6400 [2]
Chemigum N3 and N5	.5800 [2]
Chemigum N6	.5000 [2]
Chemigum N7	.5000 [2]
Hycar 1001	.5800 [2]
Hycar 1002	.5000 [2]
Hycar 1014	.6000 [2]
Hycar 1041	.5800 [2]
Hycar 1042 and 1043	.5000 [2]
Hycar 1312	.5000 [2]
Hycar 1411	.6200 [2]
Hycar 1432	.5900 [2]
Hycar 1441	.6200 [2]
Paracril AJ	.4850 [2]
Paracril B	.5000 [2]
Paracril BJ	.5000 [2]
Paracril BLT	.5000 [2]
Paracril C	.5800 [2]
Paracril CV	.5900 [2]
Paracril D	.6500 [2]
Paracril 18-80	.6000 [2]
Polysar Krynac 800	.5000 [2]
Polysar Krynac 801	.5800 [2]
Polysar Krynac 802	.5000 [2]
Polysar Krynac 803	.5000 [2]

Butadiene-Styrene Types

Ameripol 1000	.2410 [2]
Ameripol 1001	.2410 [2]
Ameripol 1002	.2435 [2]
Ameripol 1006	.2410 [2]
Ameripol 1007	.2425 [2]
Ameripol 1009	.2475 [2]
Ameripol 1500	.2410 [2]
Ameripol 1501	.2410 [2]
Ameripol 1502	.2410 [2]
Ameripol 1703	.2060 [2]
Ameripol 1705	.2035 [2]
Ameripol 1707	.1910 [2]
Ameripol 1708	.1910 [2]
Ameripol 1710	.1885 [2]
Ameripol 1712	.1885 [2]
ASRC 1000	.2410 [2]
ASRC 1001	.2410 [2]
ASRC 1004	.2410 [2]
ASRC 1006	.2410 [2]
ASRC 1009	.2475 [2]
ASRC 1018	.2700 [2]
ASRC 1019	.2650 [2]
ASRC 1500	.2410 [2]
ASRC 1502	.2410 [2]
ASRC 1503	.2625 [2]
ASRC 1703	.2060 [2]
ASRC 1708	.1910 [2]
ASCR 3110	.2600 [2]
Baytown 1600	.1760 [2]
Baytown 1601	.1760 [2]
Baytown 1602	.1760 [2]
Baytown 1801	.1600 [2]
Copo 1500	.2410 [2]
Copo 1502	.2410 [2]
Copo 1505	.2610 [2]
Copo 1712	.1885 [2]
FR-S 1000	.2410 [2]
FR-S 1001	.2410 [2]

Butadiene-Styrene (Cont'd)

FR-S 1004	.2410 [2]
FR-S 1006	.2410 [2]
FR-S 1009	.2475 [2]
FR-S 1010	.2600 [2]
FR-S 1012	.2425 [2]
FR-S 1013	.2500 [2]
FR-S 1014	.2810 [2]
FR-S 1015	.2910 [2]
FR-S 1500	.2410 [2]
FR-S 1502	.2410 [2]
FR-S 1703	.2060 [2]
FR-S 1705	.2035 [2]
FR-S 1712	.1885 [2]
Naugapol 1016	.2650 [2]
Naugapol 1018	.2700 [2]
Naugapol 1019	.2650 [2]
Naugapol 1021	.3000 [2]
Naugapol 1022	.2800 [2]
Naugapol 1023	.2850 [2]
Naugapol 1503	.2625 [2]
Naugapol 1504	.2950 [2]
Philprene 1000	.2410 [1]
Philprene 1001	.2410 [1]
Philprene 1006	.2410 [1]
Philprene 1009	.2475 [1]
Philprene 1010	.2600 [1]
Philprene 1018	.2700 [1]
Philprene 1019	.2650 [1]
Philprene 1100	.1940 [1]
Philprene 1104	.1900 [1]
Philprene 1500	.2410 [1]
Philprene 1502	.2410 [1]
Philprene 1503	.2625 [1]
Philprene 1600	.1930 [1]
Philprene 1601	.1930 [1]
Philprene 1605	.1900 [1]
Philprene 1703	.2060 [1]
Philprene 1706	.2030 [1]
Philprene 1708	.1910 [1]
Philprene 1712	.1880 [1]
Philprene 1803	.1740 [1]
Plioflex 1006	.2410 [2]
Plioflex 1500	.2410 [2]
Plioflex 1502	.2410 [2]
Plioflex 1703	.2060 [2]
Plioflex 1710	.1885 [2]
Plioflex 1712	.1885 [2]
Plioflex 1773	.2060 [2]
Plioflex 1778	.1910 [2]
Polysar Kryflex 200	.2410 [2]
Polysar Krylene	.2410 [2]
Polysar Krylene NS	.2410 [2]
Polysar Krynol 651	.1885 [2]
Polysar Krynol 652	.1910 [2]
Polysar S	.2410 [2]
Polysar S-50	.2410 [2]
Polysar S-X 371	.2550 [2]
Polysar SS-250	.3000 [2]
S-1000	.2300 [2]
S-1001	.2300 [2]
S-1002	.2325 [2]
S-1006	.2300 [2]
S-1011	.2325 [2]
S-1013	.2300 [2]
S-1100	.1850 [2]
S-1500	.2300 [2]
S-1502	.2300 [2]
S-1600	.1825 [2]
S-1601	.1825 [2]
S-1602	.1825 [2]

Butadiene-Styrene (Cont'd)

S-1703	.1950 [2]
S-1706	.1925 [2]
S-1707	.1800 [2]
S-1709	.1775 [2]
S-1712	.1775 [2]
S-1801	.1675 [2]
Synpol 1000	.2410 [1]
Synpol 1001	.2410 [1]
Synpol 1002	.2435 [1]
Synpol 1006	.2410 [1]
Synpol 1007	.2410 [1]
Synpol 1009	.2475 [1]
Synpol 1012	.2425 [1]
Synpol 1013	.2500 [1]
Synpol 1061	.2410 [1]
Synpol 1500	.2410 [1]
Synpol 1502	.2410 [1]
Synpol 1551	.2410 [1]
Synpol 1703	.2060 [1]
Synpol 1707	.1910 [1]
Synpol 1708	.1910 [1]
Synpol 1711	.1900 [1]

Butyl Rubbers

Enjay Butyl 035	.2300 [2]
Enjay Butyl 150	.2300 [2]
Enjay Butyl 165 NS	.2400 [2]
Enjay Butyl 215	.2300 [2]
Enjay Butyl 217	.2300 [2]
Enjay Butyl 218	.2300 [2]
Enjay Butyl 268 NS	.2400 [2]
Enjay Butyl 325	.2300 [2]
Enjay Butyl 365 NS	.2400 [2]
Polysar Butyl 100	.2450 [2]
Polysar Butyl 101	.2775 [2]
Polysar Butyl 200	.2450 [2]
Polysar Butyl 300	.2450 [2]
Polysar Butyl 301	.2550 [2]
Polysar Butyl 400	.2450 [2]

Neoprene

	(prices f.o.b.)
Neoprene Types AC and CG	.5500 [2]
Neoprene Type GN	.4100 [2]
Neoprene Type GN-A	.4100 [2]
Neoprene Type GRT	.4200 [2]
Neoprene Type KNR	.7500 [2]
Neoprene Type S	.4200 [2]
Neoprene Type W	.3900 [2]
Neoprene Type WHV	.3900 [2]
Neoprene Type WRT	.4500 [2]
Neoprene Type WX	.4100 [2]

Silicone Rubbers*

	(prices f.o.b.)
GE (compounded)	2.50 [3]
GE Silicone Gum (not compounded)	4.00 [3]
Silastic (compounded)	1.90 [3]
Silastic (gums)	3.85 [3]
Union Carbide (gums)	4.00 [3]
Union Carbide (compounds)	2.50 [3]

Polysulfide Rubbers

	(prices f.o.b.)
Thiokol Type A	.4700 [2]
Thiokol Type FA	.6400 [2]
Thiokol PR-1	.9500 [2]
Thiokol Type ST	1.00 [2]

(latices—all prices per pound dry weight)

Butadiene-Acrylonitrile Types

Butaprene N-300	.4600 [1]
Butaprene N-400	.5400 [1]
Butaprene N-401	.5400 [1]
Chemigum 200	.4900 [2]
Chemigum 235	.5400 [2]
Chemigum 236	.5400 [2]
Chemigum 245	.4600 [2]
Chemigum 246	.4600 [2]
Hycar 1512	.4600 [2]
Hycar 1551	.5400 [2]
Hycar 1552	.4600 [2]
Hycar 1561	.5400 [2]
Hycar 1562	.4600 [2]
Hycar 1571	.5400 [2]
Hycar 1572	.5100 [2]
Hycar 1577	.4600 [2]
Hycar 1852	.4600 [2]

Butadiene-Styrene Types

Copo 2101	.3000 [2]
Copo 2102	.3200 [2]

Butadiene-Styrene (Cont'd)

Copo 2105	.3200 [2]
Copo X-765	.3000 [2]
FR-S 2000	.2600 [2]
FR-S 2001	.2600 [2]
FR-S 2002	.2850 [2]
FR-S 2003	.2950 [2]
FR-S 2004	.2950 [2]
FR-S 2006	.2600 [2]
FR-S 2105	.3100 [2]
Pliolite 2101	.3000 [2]
Pliolite 2104	.3200 [2]
Pliolite 2105	.3200 [2]
Pliolite X-765	.3000 [2]
Naugatex 2000	.2630 [2]
Naugatex 2001	.2630 [2]
Naugatex 2002	.2880 [2]
Naugatex 2006	.2630 [2]
Naugatex 2105	.3120 [2]
Naugatex X-765	.2900 [2]
Naugatex X-767	.3120 [2]

Butadiene-Styrene (Cont'd)

S-2000	.2275 [2]
S-2006	.2150 [2]
S-2101	.2250 [2]
S-2105	.3100 [2]

Neoprene

Neoprene Latex 60	.4000 [2]
Neoprene Latex 571	.3700 [2]
Neoprene Latex 572	.3900 [2]
Neoprene Latex 601-A	.4000 [2]
Neoprene Latex 735	.3800 [2]
Neoprene Latex 736	.3800 [2]
Neoprene Latex 842-A	.3700 [2]
Neoprene Latex 950	.4700 [2]

Polysulfide Rubbers

Thiokol Type MX	.7000 [2]
Thiokol Type WD-2	.9200 [2]
Thiokol Type WD-6	.7000 [2]

Notes: (1) Freight allowed. (2) Freight extra. (3) Freight prepaid. *Covers a wide range of compounds. Readers are urged to check specific prices with producers.

MARKETS

(continued)

Reclaimed Rubber

In the first five months of this year, a total of 119,631 long tons of reclaimed rubber was produced in the United States, according to the Rubber Manufacturers Association. RMA places consumption in the same period at 118,317 long tons. In both cases, production and consumption figures are running considerably below those of the comparable period of 1956.

At the current production rate, by year end there will have been produced a total of about 285,000 long tons of reclaim. This figure is just about what it was for 1956, which seems to bear out many earlier industry estimates.

Consumption, on the other hand, if it continues at the current rate, should also approximate 285,000 long tons. This figure, however, will be about 15,000 long tons more than that which was consumed in the previous year. The disparity will have to be made up from stocks. It is interesting to note that since the first of the year, stocks have fallen by some 5,000 long tons.

(Prices for All Areas Except Calif.)

	per lb.
Premium Grade Whole Tire	.11¼
First Line Whole Tire	.11
Second Line Whole Tire	.10½
Third Line Whole Tire	.10¼
Fourth Line Whole Tire	.09¾
Black Carcass	.15¼
No. 1 Light Colored Carcass	.22
No. 1 Peel	.11
Butyl Tube Reclaim	.14
Natural Rubber Black Tube	.16
Natural Rubber Red Tube	.21
Natural Rubber Gray Tube	.21

Scrap Rubber

In the words of many in the trade, the scrap rubber market is best described as "routine"; "dull", "quiet", etc. Many reclaimers were closed for the annual vacation periods during the past few weeks, and this situation added to the already quiet market. In spite of the lack of activity, scrap rubber prices are holding fairly steady.

A spark of light has come from the Bureau of the Census, Department of Commerce, which reports that U.S. exports of scrap rubber during April exceeded March shipments by some 60,000 pounds. April's exports of 4,526,464 pounds, valued at $404,717, were the highest for any one month in 1957. Shipments to overseas destinations in March totaled 4,466,095 pounds worth $234,001.

The Rubber Manufacturers Association reports that 21,989 long tons of scrap rubber were consumed in March. In the first five months of this year, a total of 105,732 long tons of scrap rubber were consumed.

(Prices Delivered Akron)

Mixed tires	ton	16.00
Light colored carcass	lb.	.05½
No. 1 peelings	ton	45.00
No. 2 peelings	ton	30.00
No. 3 peelings	ton	20.00
Buffings	ton	16.00
Truck and Bus S.A.G.	ton	19.00
Passenger S.A.G.	ton	17.50
Natural Rubber Red Tubes	lb.	.08
Natural Rubber Black Tubes	lb.	.07
Butyl Rubber Tubes	lb.	.04½

Tire Fabrics

Cotton maintained its dominant position in the passenger car field between 1950 and 1955 despite substantial gains in this period by other materials, according to a survey made by the Department of Agriculture on fabrics and fibers for passenger cars. The survey showed that the automobile industry purchased a total of 383,824,508 pounds of textile and related materials for 1955 passenger car interiors. The estimated number of cars to which this data applied was 6,585,177.

Cotton consumption for all uses except seat padding increased from 36 per cent in 1950 to 43 per cent in 1955, with the poundage used in 1955 totalling 53,437,410. Cotton consumption showed a relative decline, however, for all uses including seat padding, even though the actual poundage increased.

Total consumption of cotton including seat padding was 210,623,188 pounds in 1955, compared to 197,288,556 pounds in 1950, a rise of 7 per cent. The relative position of cotton, nevertheless, fell from 62 per cent of the over-all interior poundage in 1950 to 55 per cent in 1955. This decline was due, in part, to increased uses of new seat padding materials, including foam rubber, which rose from a relative position of 12 to 15 per cent.

In the period covered, nylon usage also grew from 4,097,688 pounds in 1950 to 7,275,970 pounds in 1955. The biggest application for nylon in auto interiors is upholstery and its second biggest use is in widewall materials.

Vinyl-Coated Nylon

Leading manufacturers of tents foresee a bright future for nylon coated units, with expanding uses in many fields anticipated. One of the major esthetic advantages, it is said, is the fact that virtually any color can be obtained by using a vinyl coating over the nylon. This suggests wide usage for this type of tenting in summer theaters, fairgrounds, exhibits, etc.

Coated nylon tents weigh about one-third less than conventional tents, and are said to have twice the service life. In addition, they require less maintenance because they do not shrink when wet. Coated nylon tents can be hosed off and stored wet without fear of weakening from mildew or rot.

Not only are these tents water repellent, but they are thoroughly waterproof. When properly coated, they will retain their color far longer than the best dyed conventional fabric, leading manufacturers state.

(Prices f.o.b. Shipping Point)

Rayon Tire Cord

1100	lb.	.73
1650	lb.	.67
2200	lb.	.67½

Nylon Tire Cord

210	lb.	1.95
840	lb.	1.80

Rayon Graded Fabric

100	lb.	.69
1650	lb.	.63½
2200	lb.	.63

Cotton Chafers

8.9 oz. (per square yard)	lb.	.68
9.25 oz. (per square yard)	lb.	.66
11.65 oz. (per square yard)	lb.	.62
14.4 oz. (per square yard)	lb.	.71

Liquid Latex

Natural: The Rubber Manufacturers Association estimates that in the first five months of the current year, a total of 29,527 long tons of Hevea latex was imported into the United States. In the same period, a total of 864 long tons was re-exported, leaving a total new supply of 28,663 long tons.

During the same period, RMA states, 32,666 long tons of Hevea latex were consumed. In the same period of the preceding year, a little over 30,000 long tons of Hevea latex were consumed. Stocks as of May 31 stood at 11,932 long tons, just a few pounds less than at the end of the previous month.

At the current rate of consumption, about 6,500 long tons of Hevea latex are being used each month. If this consumption pace were continued for the balance of the year, a total of 78,000 long tons will be consumed, or about 5,000 long tons more than in 1956.

Natural rubber latex is currently selling at the 40-41c per pound level in car load lots at East Coast ports. The trade recognizes that at these prices consumer resistance tends to develop. This factor must be taken into consideration in attempting to estimate total consumption for the year.

Synthetic: Figures for the first five months of 1957 show that S-type latex production is running at about the same level as in the previous year, the actual figures being 32,737 long tons for the first five months of 1957, and 30,480 for the first five months of 1956. At this production rate, about 70,000 long tons of S-type latex should be produced this year, or slightly more than in the previous year.

Consumption too, is keeping pace, with 29,058 consumed in the first five months of this year, against the 28,635 long tons consumed in the previous year. By this token, total consumption figures at year end should be in the vicinity of 66,000 long tons.

Cotton

The price of middling uplands on the New York Cotton Exchange has moved in the extremely narrow range of 30 points since our last report (July 1), high for the period being 35.65c reached on July 17, and low being 35.35c reached on July 29. The average price of middling uplands for the month of July was 35.49c based on 22 trading days. This compares with an average of 35.45c in the previous month.

While heavy exports of cut-priced, Government-owned raw cotton have permitted the Department of Agriculture to scale down its cotton inventories during the past year, the Department took title to about 3,700,600 bales of 1956 crop cotton on July 31. This cotton has been under the loan program. Government raw cotton inventories a year ago totaled about 9,800,000 bales. With the new takeover, the Government is now estimated to own about 5,200,000 bales.

The Department still has about 1,500,000 bales of cotton from 1955 and prior year crops. In addition, the Government is still holding about 3,000,000 bales of other cotton which has already been sold to domestic mills and export buyers.

Raw cotton sales for export at reduced prices will total about 7,700,000 bales for the year ended August 1, when all the figures are in, according to government and trade sources.

MARKET PRICES

CHEMICALS & COMPOUNDING INGREDIENTS

AUGUST 1, 1957

Prices are, in general, f.o.b. works and cover the domestic markets only. Export prices, as a rule, are usually slightly higher, due to packing regulations, special handling, etc.

Abbreviations: bbls., barrels; c.l., carload; cyl., cylinder; dlvd., delivered; dms., drums; eqld., equalized; l.c.l., less than carload; M.B. masterbatch; min., minimum; ref., refined; sap., saponified; sp., special; syn., synthetic; t.c., tank cars.

*Trademark. †For Export Only.

The arrangement of this section closely follows the Chemical Section of the 1955-56 RUBBER RED BOOK. Readers are referred to that edition for the correct classification of any material or brand name. Suppliers of every material are contacted for price information. However, only those materials are listed for which quotations have been furnished within the past six months. The quotations are not guaranteed and prospective purchasers should contact suppliers for information. Suppliers are requested to send current price information to the Market Editor, RUBBER AGE.

ACCELERATORS

A-1 (Thiocarbanilide)*	lb.	.72	.79
A-32*	lb.	.66	.80
A-100*	lb.	.52	.66
Accelerator No. 8*	lb.	——	1.10
Accelerator—49*	lb.	.57	.58
Accelerator 89*	lb.	——	1.20
Accelerator 108*	lb.	——	.90
Accelerator—552*	lb.	——	2.25
Accelerator—808*	lb.	.66	.68
Accelerator—833*	lb.	1.17	1.19
Accelerator B*	lb.	——	.89
Altax*	lb.	.52	.54
Ancap*(†)	lb.	.38	.40
Ancatax*(†)	lb.	.48	.50
Ancazate BU (ET & ME)*(†)	lb.	——	1.07
Ancazide ET*(†)	lb.	——	1.07
ME*(†)	lb.	——	1.14
Arazate*	lb.	——	2.25
Arquad 12*	lb.	.55	.61
Beutene*	lb.	.66	.68
Bismate, Rodform*	lb.	——	3.00
Butazate*	lb.	——	1.04
Butyl Eight*	lb.	1.10	1.35
Butyl Namate	lb.	.45	.50
Butyl, Ethyl & Methyl Zimate Slurry (50% solids content)	lb.	.85	.89
Captax*	lb.	.42	.44
C-P-B*	lb.	——	1.95
Cumate, Rodform*	lb.	——	1.45
Diorthotolylguanidine	lb.	.62	.63
Dipac*	lb.	——	.85
Diphenylguanidine	lb.	.52	.58
El-Sixty*	lb.	.60	.67
Ethazate*	lb.	——	1.04
50D*	lb.	——	.85
Ethyl Thiurad*	lb.	——	1.04
Ethyl Tuex*	lb.	——	1.04
Ethylac*	lb.	.93	.95
Guantal*	lb.	.60	.67
Harvex*	lb.	.70	.76
Hepteen Base*	lb.	——	1.85
Kure-Blend MT*	lb.	——	.70
Ledate, Rodform*	lb.	——	1.04
MBT-XXX*	lb.	.53	.55
Merac*	lb.	.75	1.05
Mercaptobenzothiazole	lb.	.42	.44
Mercaptobenzothiazyl Disulfide	lb.	.52	.54
Mertax*	lb.	.53	.60
Methazate*	lb.	——	1.04
Monex*	lb.	——	1.14
Mono Thiurad*	lb.	——	1.14
Morfex*	lb.	.65	.67
2-MT	lb.	——	1.00
NA-22* (for neoprene)	lb.	——	1.00
NOBS No. 1*	lb.	.74	.76
Special*	lb.	.79	.81
O-X-A-F	lb.	.53	.55
Pentex*	lb.	——	1.04
Flour*	lb.	——	.26
Permalux (Neoprene)*	lb.	——	2.17
Phenex*	lb.	.55	.57
Polyac*	lb.	——	1.85
R-2 Crystals*	lb.	——	4.35
Rotax*	lb.	.53	.55
RZ-50-A*	lb.	——	1.00
B*	lb.	——	1.00
Santocure*	lb.	.74	.81
NS*	lb.	.79	.86
Selenac* (Ethyl, Methyl)	lb.	——	4.25
Seleram, Ethyl	lb.	——	4.25
Setsit-5*	lb.	.75	1.05
9*	lb.	.85	1.15
SPDX-GH*	lb.	.74	.76
GL*	lb.	1.20	1.30
Tellurac*	lb.	——	1.45
Tepidone*	lb.	.45	.48
Tetrone A*	lb.	——	1.91
Thiofide*	lb.	.52	.59
S*	lb.	.62	.69
Thionex*	lb.	——	1.14
Thiotax*	lb.	.42	.49
Thiram, Ethyl	lb.	——	1.04
Methyl	lb.	——	1.14
Thiurad*	lb.	——	1.14
Thiuram E*	lb.	——	1.04
M*	lb.	——	1.14
Trimene*	lb.	.56	.58
Base*	lb.	1.03	1.06
Triphenyl Guanidine	lb.	——	.90
Tuads* (Ethyl)	lb.	——	1.04
Tuads* (Methyl)	lb.	——	1.14
Tuex*	lb.	——	1.14
Ultex*	lb.	1.00	1.10
Unads*	lb.	——	1.14
ZB*	lb.	——	.85
ZE*	lb.	——	.85
ZM*	lb.	——	.85
Vulcacure NB*	lb.	.45	.45
NS*	lb.	.75	1.05
ZB*, ZE*, ZM*	lb.	.85	.89
Z-B-X*	lb.	——	2.45
Zenite*	lb.	.52	.54
Zenite A*	lb.	.62	.64
Zenite Special*	lb.	.53	.55
Zetax* (uncoated)	lb.	.53	.55
Zimate* (Butyl)	lb.	——	1.04
Zimate* (Ethyl)	lb.	——	1.04
Zimate* (Methyl)	lb.	——	1.04
Ziram, Butyl	lb.	——	1.04
50% Dispersion	lb.	.87	.89
Ziram, Ethyl	lb.	——	1.04
50% Dispersion	lb.	.87	.89
Ziram, Methyl	lb.	——	1.04
50% Dispersion	lb.	.87	.89

ACTIVATORS

Blue Lead, Sublimed (dlvd.)	lb.	.17¼	.18¼
Cottonseed Fatty Acids			
Wochem 210*	lb.	——	.16¼
211*	lb.	——	.16¼
Fish Oil, Hydrogenated, Fatty Acid			
DAR-S* (dlvd.)	lb.	.12	.14½
DAR-HY* (dlvd.)	lb.	.14½	.17½
Hydrofol Acids* (dlvd.)	lb.	.15¼	.17½
Hyfac 430* (dlvd.)	lb.	.16¾	.19½
Neo-Fat H.F.O.* (dlvd.)	lb.	.14½	.15¾
Neutrex* (dlvd.)	lb.	.15½	.17½
Stearex Beads* (dlvd.)	lb.	.09¼	.10¾
Stearite*	lb.	.12	.14
Talene* (dlvd.)	lb.	.15¾	.18¼
Lime, Hydrated			
Arrowhead*	ton	——	21.00
Marblehead*	ton	——	17.75
Sierra*	ton	——	22.50
Litharge			
Eagle-Picher* (c.l.)	lb.	.18	——
SB* (dlvd.)	lb.	——	.18½
Magnesium Oxide, Heavy			
General Magnesite 500*	lb.	.05½	.06
600*	lb.	.06½	.07
Kaiser 325*	lb.	.057	.073
Michigan No. 15*	lb.	.05½	.06½
Magnesium Oxide, Light			
Carey Mag*	lb.	.25¼	.26
General Magnesite* (neoprene grade)	lb.	.30	.32
General Magnesite No. 101*	lb.	.25¼	.26
Genmeg MLW*	lb.	.25¼	.26
K & M* (neoprene grade)	lb.	.29¼	.30

ACTIVATORS (Cont'd)

Magnesium Oxide, Light (cont'd)			
Light Calcined Magnesia No. X-01*	lb.	.25¼	.26
Maglite D*	lb.	.25¼	.26
L and M*	lb.	.29¼	.30
Michigan No. 30*	lb.	.25¼	.26
Neomag Powder*	lb.	.29¼	.30
Pellets*	lb.	.31¼	.32
Michigan No. 40*	lb.	.29¾	.30
Oleic Acid			
Emersol 210* (dlvd.)	lb.	.18¼	.20¼
Groco Red Oil	lb.	.18¾	.21¼
Neo-Fat 92-04*	lb.	.20½	.22½
94-04*	lb.	.18½	.20½
Wochem 310, 311	lb.	——	.18¼
Palm Fatty Acids			
Groco 45*	lb.	.15¾	.18¼
Neo-Fat*	lb.	.15¼	.17¾
Wochem 280*	lb.	——	.16¼
281*	lb.	——	.16¾
Potassium Oleate (dms.)	lb.	.30	.73
Red Lead			
Eagle-Picher* (c.l.)	lb.	.19	——
No. 2 RM* (dlvd.)	lb.	——	.18½
Sodium Laurate, 75%	lb.	.64	.89
Sodium Oleate, 75%	lb.	.54	.79
Paste (dms.)	lb.	.39	.64
Sodium Stearate, 75%	lb.	.54	.89
Stearic Acid, Single Pressed			
Emersol 110* (dlvd.)	lb.	.14¾	.17¼
Groco 53*	lb.	.15¼	.17¾
Neo-Fat 18-53*	lb.	.14¾	.16¼
Standard Pearlstearic* (dlvd.)	lb.	.14¾	.17¼
Stearex B* (dlvd.)	lb.	.15½	.16¾
Wochem 730*	lb.	——	.12
Stearic Acid, Double Pressed			
Choice Pearlstearic* (dlvd.)	lb.	.15¾	.18¼
Emersol 120* (dlvd.)	lb.	.15¼	.17¾
Groco 54*	lb.	.15¼	.18¼
Hydrofol Acid 51RG	lb.	.11¼	.13¾
Neo-Fat 18-54*	lb.	.15¼	.17¼
Wochem 731*	lb.	——	.14¾
Stearic Acid, Other			
Extra Pearlstearic* (dlvd.)	lb.	.18	.20½
Groco*	lb.	.12	.14
Neo-Fat 18*	lb.	.18½	.20½
18-58*	lb.	.14¼	.16¼
18-61*	lb.	.16¼	.18¼
Stearite*	lb.	.11¼	.13¼
Wochem 720*	lb.	——	.10¾
721*	lb.	——	.10¾
732*	lb.	——	.15¾
White Lead Basic Carbonate	lb.	.19	.20
White Lead Basic Sulfate	lb.	.17¼	.18¼
Zinc Laurate			
Laurex*	lb.	.33	.34
Zinc Stearate	lb.	.41	.46
Aquazinc K.C.*	lb.	.30	.55
Crown Brand*	lb.	.39	.44

Unclassified Activators

Actifat* (dms.)	lb.	——	.18
Aktone*	lb.	.21¼	.23¼
Barak*	lb.	——	.62
Curade*	lb.	.57	.59
Dibenzo G-M-F	lb.	——	2.60
D-B-A*	lb.	——	1.95
G-M-F*	lb.	——	2.60
Dibutylamine (dlvd.)	lb.	.55½	.56½
MODX*	lb.	.36	.38
Neo Fat 42-07*	lb.	.10¼	.12¼
Ridacto* (dms.)	lb.	.25	.26
Snodatte* (dlvd.)	lb.	.19	.21½
Vimbra	lb.	.32	.38½
Vulklor*	lb.	.88	.98

ANTI-COAGULANTS

Aqua Ammonia* (dms.)	lb.	.031	.035
M.B.M.C.* (l.c.l.)	lb.	.54	.76

ANTI-FOAMING AGENTS

Aero Anti Foam H*	lb.	——	.20
Regular*	lb.	——	.12
Anhydrol 6991*	lb.	.51	.56
D.C. Antifoam A*	lb.	5.45	6.65
Antifoam A Emulsion*	lb.	2.05	4.00
Antifoam AF Emulsion*	lb.	2.05	2.85
Defoama W-1701*	lb.	——	12½
Defoamer A-25*	lb.	——	3.00
Defoamer 630*	lb.	——	.14
Deltyl Prime	lb.	.70	.80

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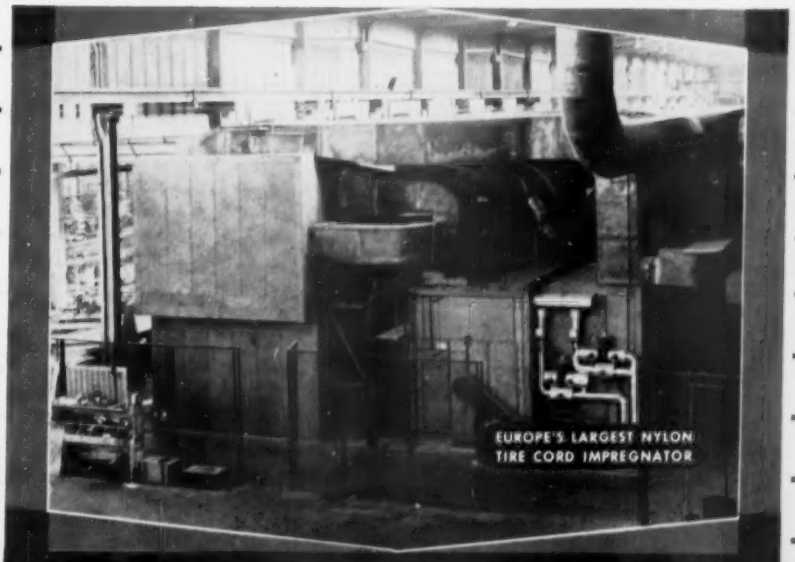


CONTINUOUS IMPREGNATING & COATING SYSTEMS

. . . WORLD-WIDE SERVICE . . .

TECHNICAL DATA ON REQUEST: VARNISH, LATICE & RUBBER IMPREGNATION OF FABRICS & PAPERS

C. A. LITZLER CO., INC.

1817 BROOKPARK RD. CLEVELAND 9, OHIO CABLE "CALITZ"

EXPORT REPRESENTATIVE: GILLESPIE & CO. OF N. Y., 96 WALL ST., NEW YORK 5, N. Y.

ANTI-FOAMING AGENTS (Cont'd)

G-E Antifoam SS-24*	lb.	5.30	6.65
SS-66*	lb.	5.30	6.65
60 Emulsion*	lb.	2.05	3.75
Igepol CO-210	lb.	—	.36
Kessco X-3* (dms.)	lb.	—	.35
X-180*	lb.	—	.29¼
X-181*	lb.	—	.38½
Nopco 1407*	lb.	.19½	.20½
1497-V*	lb.	.13¾	.14¼
1907-B*	lb.	.18¼	.19¼
JMK*	lb.	.48	.49
JMU*	lb.	.22½	.23½
JMY*	lb.	.19¼	.20¼
Pluronic L61*	lb.	.33½	.39
RS-968*	lb.	.38	.38½
Terpinol Prime No. 1	lb.	.35	.50
Tributyl Phosphate (dms.)	lb.	.52½	.53½

ANTIOXIDANTS

Agebest 1293-22A*	lb.	1.90	2.00
AgeRite Alba*	lb.	2.35	2.45
Gel*	lb.	.67	.69
Hipar*	lb.	1.00	1.02
H.P.*	lb.	.76	.78
Powder*	lb.	.55	.57
Resin*	lb.	.82	.84
Resin D*	lb.	.55	.57
Spar*	lb.	.55	.57
Stalite*	lb.	.55	.57
Stalite S*	lb.	.55	.57
Superlite*	lb.	.55	.57
White*	lb.	1.45	1.55
Akroflex C*	lb.	.81	.83
CD*	lb.	.76	.78
Aminox*	lb.	.55	.57
Antioxidant 425*	lb.	2.47	2.50
Antioxidant 2246*	lb.	1.50	1.53
Antox*	lb.	.55	.57
Aranox*	lb.	—	3.25
Benzoquinone	lb.	1.50	1.75
Betanox Special*	lb.	.85	.87
B-L-E*	lb.	.55	.57
B-X-A*	lb.	.55	.57
Deenax*	lb.	.95	1.05
Di-tert-Butyl-para-Cresol	lb.	.86	1.16
Eugenol C-95%*	lb.	2.30	2.50
Flectol H*	lb.	.55	.62
Flexamine*	lb.	.76	.78
Ionol* (dms.)	lb.	.91	.95
Neozone A*	lb.	.59	.61
C*	lb.	—	.83
D*	lb.	.55	.57
Nevastain A*	lb.	.51	.61
B*	lb.	.51	.70
Nullapon BF-12*	lb.	—	.21½
BF-13*	lb.	—	.25½
BF-78*	lb.	—	.55
BF-Acid*	lb.	—	.85
Octamine*	lb.	.55	.57
Oxidex*	lb.	—	3.60
PDA-10*	lb.	.46	.48
Permalux*	lb.	—	2.17
Polygard*	lb.	.55	.57
Santoflex AW*	lb.	.78	.85
DD*	lb.	.55	.62
75*	lb.	.97	1.04
Santovar-A*	lb.	1.50	1.57
Santowhite Crystals*	lb.	1.55	1.62
Santowhite L*	lb.	.55	.62
MK*	lb.	1.25	1.32
Powder*	lb.	1.55	1.62
Sequestrene AA*	lb.	.76	.85
NA2*	lb.	.62	.70
NA3*	lb.	.61	.69
Stabilite*	lb.	.55	.57
Alba*	lb.	.74	.79
FLX*	lb.	.76	.78
L*	lb.	.63	.65
White*	lb.	.52	.54
White Powder*	lb.	.41	.43
Stabilizer No. 1*	lb.	1.55	1.80
Stabilizer No. 9-A*	lb.	.80	1.05
Styphen I*	lb.	.51	.55
Sunolite*	lb.	.16	.22
Tannic Acid, Tech.	lb.	.46	.48
Thermoflex A*	lb.	1.00	1.02
V-G-B*	lb.	.75	.77
Wing-Stay S*	lb.	.53	.57

ANTI-SCORCHING AGENTS

Armeen HT*	lb.	.34	.40
Good-rite Vultrol*	lb.	.62	.64
Harcopol 1183*	lb.	.70	.74
Retarder PD*	lb.	.37	.39
W*	lb.	—	.42
Sodium Acetate 60-62% Crystals	lb.	.08	.08½

ANTISEPTICS AND GERMICIDES

A.P.C. 6901*	lb.	.32	.38
Arquad S*	lb.	.38	.44
Formaldehyde (dms.)	lb.	.06	.076
G-4* (bbls.)	lb.	1.09	1.29
G-11*	lb.	1.98	2.08
Halane*	lb.	.40	.47
Ortho Cresol (26°—27°)	lb.	.14	.16¼
Preventol GD	lb.	—	1.09
Retarder D*	lb.	.42	.50
Vancide	lb.	—	.80

ANTI-WEBBING AGENTS (for Latex)

DC 7 Compound*	lb.	5.13	6.50
Webnix 34-L*	lb.	1.25	1.75
69-C*	lb.	1.50	2.25

AROMATICS (DEODORANTS)

Airkem 115*	gal.	—	6.50
122*	gal.	—	6.50
186*	gal.	—	6.50
Alamask AA*	lb.	—	3.00
AF*	lb.	—	2.50
AO*	lb.	—	1.50
AR*	lb.	—	.50
BG*	lb.	—	1.15
BGM*	lb.	—	.60
CY*	lb.	—	2.40
DI*	lb.	—	3.35
DL*	lb.	—	1.95
H*	lb.	—	5.50
LD*	lb.	—	.75
ND*	lb.	—	2.75
O*	lb.	—	6.50
OS*	lb.	—	5.25
Bouquet 149*	lb.	—	3.00
Coumarin*	lb.	3.60	3.70
Curodex 19*	lb.	4.75	4.90
188*	lb.	5.75	5.90
198*	lb.	6.75	6.90
Deodorant 65*	lb.	—	1.85
Deodorant L-37*	lb.	2.15	2.25
L-44*	lb.	2.65	2.75
N.L.T.X.*	lb.	1.90	2.00
Deodorant Oil GD 6422*	lb.	1.90	2.20
GD 6423*	lb.	1.60	1.90
GD 6575*	lb.	2.40	2.90
GD 31063*	lb.	2.25	2.75
Ethavan*	lb.	6.20	6.25
Latex Perfume 17326	lb.	—	4.00
18301	lb.	—	3.00
22258	lb.	—	2.50
Naugaromes* (dms.)	lb.	.60	3.00
Neutroleum Delta*	lb.	—	2.60
Gamma*	lb.	—	3.60
Parador A*	lb.	1.80	2.10
C*	lb.	2.00	2.50
E*	lb.	.25	.40
GD 5280*	lb.	2.00	2.50
GD 53481*	lb.	1.70	2.00
Perfume Oil Bouquet Vanilla M*	lb.	1.60	1.70
Rodo No. 0*	lb.	4.00	4.50
No. 10*	lb.	5.00	5.50
Rubbarome* (dms.)	lb.	.60	3.80
Rubber Perfume 12*	lb.	—	4.35
Russian Leather 7*	lb.	—	4.35
Vanillin	lb.	2.75	2.80

BLOWING AGENTS

Ammonium Bicarbonate	cwt.	—	8.00
Better Blend Soda* (c.l., bags)	cwt.	—	2.55
Blowing Agent No. 81105	lb.	.32	.35
Celogen*	lb.	—	1.95
AZ*	lb.	—	1.95
Diazo Amino Benzene	lb.	—	.73
Neo Fat 42-12*	lb.	.10¾	.12¼
Opex 40	lb.	.75	.76
Sodium Bicarbonate, U.S.P. (c.l., bags)	cwt.	—	2.40
Sponge Paste*	lb.	—	.20
Unicel ND*	lb.	—	.76
S*	lb.	—	.20
Urea	lb.	.06	.07

BONDING AGENTS

Base 6986*	lb.	.27	.32
Braze*	gal.	6.00	9.00
Cover Cement*	gal.	2.50	4.00
Durez 12987*	lb.	—	.54
Gen-Tac Latex*	lb.	.70	.75
Hylene M*	lb.	3.50	3.75
M-50*	lb.	1.90	2.15
Penacolite B1A*	lb.	—	.95
R-2710*	lb.	—	.95
Pliobond 20*	gal.	2.91	4.23
30*	gal.	3.65	4.97
Rex Compounds*	gal.	1.30	1.90
Thixons*	gal.	3.30	9.00
Ty-Ply Q (BN & S)*	gal.	6.75	8.00
Tygobond 30*	gal.	5.50	7.45
Vinculux	gal.	—	4.95

COAGULANTS

Acetic Acid—56% (bbls.)	cwt	9.00	11.00
Glacial 99½% (dms.)	lb.	.12	.13
Calcium Nitrate, Tech. Flake	lb.	.12½	.15
Hydroxyacetic Acid—70% (dms.)	lb.	—	.09$
Zinc Nitrate, Tech. Flake	lb.	—	.20

COLORING AGENTS

Black

Aquablak B*	lb.	.09¾	.10¼
M*	lb.	.10½	.11
R*	lb.	.10¾	.11¼
S*	lb.	.11¾	.12¼
Black Shield 4-35* (dms)	lb.	.09	.09½
No. 5	lb.	.10	.10½
No. 6	lb.	.09	.09½
L-1404B	lb.	.10½	.11
Carbon Black—See *Reinforcing Agents*			
Cooke 1026*	lb.	—	2.50
Lampblack No. 10*	lb.	.06	.09
Mapico Black Iron Oxide* (50 lb. bags)	lb.	.14¼	.14½
Pure Black Iron Oxide	lb.	.14¼	.14½

COLORING AGENTS (Cont'd)

Blue

Akron Masterbatches*	lb.	2.23	2.78
Toners*	lb.	2.30	6.35
Blue Powders	lb.	2.20	3.75
Cooke M.B. Blue*	lb.	2.20	3.75
Disco Blues	lb.	2.20	3.45
Monastral Rubber Blue CPL*	lb.	—	1.95
PCD, Dispersed*	lb.	—	2.20
Peacoline Blue*	lb.	—	3.85
Ramapo Blue*	lb.	2.75	3.00
Rubber Blue GD* (Disp.)	lb.	—	4.75
Rubber Blue X-1999*	lb.	—	1.90
Rubber Dispersed Blues	lb.	2.52	2.78
Solfast Sky Blue*	lb.	3.00	3.60
Stan-Tone MBS*	lb.	1.55	4.55
GPE*	lb.	—	2.50
PC*	lb.	1.40	1.80
Ultramarine	lb.	.14	.30
Vansul Blue M.B.*	lb.	.95	2.60

Brown

Brown Iron Oxide	lb.	.15¼	.15½
Mapico Brown* (50 lb. bags)	lb.	.15¼	.15½
Stan-Tone GPE*	lb.	—	3.00
Vansul Brown M.B.* (Organic)	lb.	—	2.15

Green

Akron Masterbatches*	lb.	1.38	3.08
Toners*	lb.	1.35	4.95
Cooke M.B. Green*	lb.	1.60	2.80
1013*	lb.	—	2.80
Disco Greens	lb.	1.55	2.80
Green Powders	lb.	1.35	3.95
Monastral Rubber Green GSD* (Dispersed)	lb.	—	2.66
GSL*	lb.	—	2.20
Permansa Green CP-594*	lb.	—	1.35
Pigment Green B*	lb.	—	1.35
GL-652D*	lb.	.90	1.00
Ramapo Green*	lb.	—	3.50
Rubber Dispersed Greens	lb.	1.23	3.08
Rubber Green FD* (Disp.)	lb.	—	2.05
Rubber Green X-1292*	lb.	—	1.65
Solfast Green*	lb.	—	3.95
Stan-Tone MBS*	lb.	1.55	3.35
GPE*	lb.	3.00	4.50
PC*	lb.	1.70	3.80
Vansul Green M.B.*	lb.	1.05	2.90

Maroon

Akron Masterbatches*	lb.	—	4.10
Toners*	lb.	2.00	4.00
Pyrolux Maroon*	lb.	—	3.65
Vansul Maroon M.B.*	lb.	—	3.35

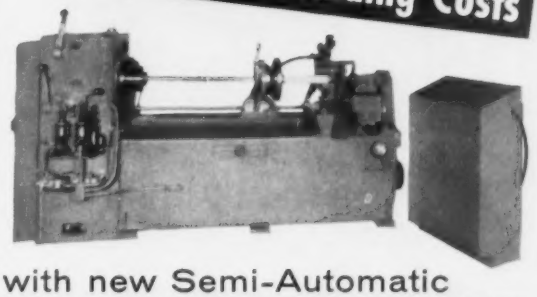
Orange

Akron Masterbatches'	lb.	2.42	2.77
Toners*	lb.	2.82	4.00
Benzidene Orange	lb.	—	3.10
Cooke MB*	lb.	2.25	2.35
1021*	lb.	—	2.25
Dianisidine Orange*	lb.	—	2.70
Disco Oranges	lb.	2.30	2.85
Mercadium X-2667*	lb.	—	1.70
Molybdate Orange	lb.	—	.48
Oswego Orange X2065*	lb.	—	3.15
Rubber Orange OD* (Disp.)	lb.	—	2.25
Stan-Tone Cadmium Dry*	lb.	2.10	2.20
Cadmium Paste*	lb.	2.47	3.20
GPE*	lb.	1.20	4.35
PC*	lb.	.75	2.75
Vansul Orange M.B.*	lb.	2.40	2.45

Red

Akron Masterbatches*	lb.	1.00	3.53
Toners*	lb.	.88	5.60
Arcturus Reds*	lb.	—	1.20
Antimony Trisulfide	lb.	.72	.78
R.M.P. Sulfur Free*	lb.	—	.78
R.M.P. No. 3*	lb.	—	.72
Brilliant Toning Reds*	lb.	1.65	1.90
Cadmolith Red* (dms.)	lb.	2.10	3.23
Cooke M.B. Red*	lb.	1.05	3.25
1010*	lb.	—	1.75
Disco Reds	lb.	1.05	3.25
Graphic Red* (dlvd.)	lb.	.93	.98
Kroma Reds*	lb.	.14	.15
Lake Red C*	lb.	—	1.20
Mapico Reds* (50 lb. bags)	lb.	.13¾	.14
Mercadium X-2668 Light*	lb.	—	1.85
X-2669 Medium Light*	lb.	—	2.00
X-2670 Medium*	lb.	—	2.15
X-2671 Dark*	lb.	—	2.30
Oximony Red Iron Oxide	lb.	.12¼	.13
Polaris Red*	lb.	—	1.65
Recco Red Oxide*	lb.	.12	.13
Red Iron Oxide, Light	lb.	.13¼	.14
Red Powders	lb.	—	4.40
Rubber Dispersed Reds	lb.	1.47	3.58
Rubber Red PBD* (Disp.)	lb.	—	1.90
2BD, Dispersed*	lb.	—	1.80
2BL*	lb.	—	1.24
PBL*	lb.	—	1.24
Rubanox Reds*	lb.	1.40	1.50
Rubber Red CP-339* (dlvd.)	lb.	—	1.10
Rubber Red X-1148*	lb.	—	.93
Solfast Red*	lb.	1.40	1.50
Stan-Tone MBS*	lb.	1.20	3.53
GPE*	lb.	1.65	2.00
PC*	lb.	1.30	2.50
PDS*	lb.	1.40	1.55
PVC*	lb.	1.65	1.90
Vansul Red M.B.*	lb.	1.00	3.35
Watchung Red*	lb.	1.65	1.95

Eliminate Rewinding Costs



with new Semi-Automatic

BR TAPE CUTTER

Now you can make individual width cuts right off the roll — so cleanly they're ready for packing when they fall! You save all the costly rewinding expenses inherent in conventional cutter use.

Makes cuts from full rolls of vinyl, plastic, cloth, cellophane and similar tapes. Easily handles materials to maximums of 37" web, 2½" wall thickness and paper core I.D. 3½".

Same capacity machine also supplied with manual controls.

Write, wire, phone today for complete information.

FINE BR TOOLS

BLACK ROCK MFG. CO.
179 Osborne Street • Bridgeport 5, Connecticut
NEW YORK OFFICE: 261 BROADWAY

REMINDER...

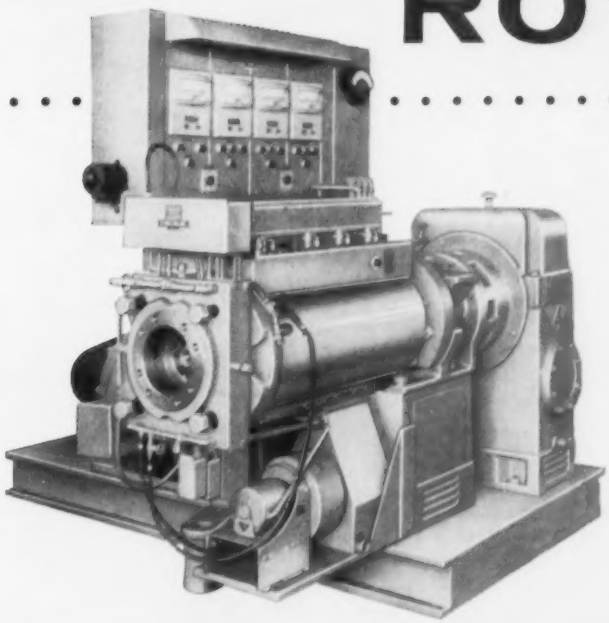
Askania Regulator Application Bulletin No. 30.1 technically describes EDGE POSITION CONTROLS for tire lining, calendering, rewinding and slitting operations.

The bulletin shows how edge position controls are applied and installed . . . the degree of accuracy to be expected . . . and provides other vital information which will help you with your production problems.

Write for your copy to
Askania Regulator Company,
286 E. Ontario, Chicago, Ill.

ASKANIA REGULATOR COMPANY
"CONTROLS FOR INDUSTRY"
HYDRAULIC, ELECTRONIC CONTROLS & SERVOS, GENERAL SYSTEMS, ENGINEERING & COMPUTER SERVICE, VALVE ACTUATORS & CYLINDERS
A SUBSIDIARY OF GPE

ROYLE



SPIROD EXTRUDERS

These all electric extruders with radiant heat and high velocity evaporative cooling are designed to process either plastic or rubber compounds. The result of more than three quarters of a century of experience — Royle pioneered the extrusion process in 1880— in the design and construction of extruding machines time tested features have been built into Spirod to assure dependability.

Write for Bulletin #463

JOHN ROYLE & SONS

ROYLE PATERSON N. J. 1880

PIONEERED THE CONTINUOUS EXTRUSION PROCESS IN

London, England	Home Office	Akron, Ohio	Los Angeles, Cal.	Tokyo, Japan
James Day (Machinery) Ltd.	V. M. Hovey J. W. VanRiper	J. C. Clinefelter	H. M. Royal, Inc.	Okura Trading Co., Ltd.
Hyde Park 2430 - 0456	SHerwood 2-8262	BLackstone 3-9222	LUdlow 9-3261	(56) 2130 - 2149

COLORING AGENTS (Cont'd)

Tan

Mapico Tan 15* (50 lb. bags)	lb.	.22¼ -	.2300
20* (50 lb. bags)	lb.	.22¼ -	.2300

White—Lithopone

Eagle-Picher*	lb.	.0800 -	.0975
Permolith*	lb.	.0837½ -	.0912½
Sunolith*	lb.	.0800 -	.0875

White—Titanium Pigments

Horse Head Anatase Grades*	lb.	.25½ -	.26½
Rutile Grades*	lb.	.25½ -	.26½
Stan-Tone PC*	lb.	—— -	.55
Ti-Cal*	lb.	.09 -	.09¼
R-22*, R-25*, R-27*, R-30*	lb.	.09¼ -	.09⅜
R-60*	lb.	.09⅜ -	.10⅜
Ti-Pure*	lb.	.24½ -	.27½
Anatase Grades*	lb.	.25½ -	.26½
Rutile Grades*	lb.	.27½ -	.28½
Titanox A*—all grades (dlvd.)	lb.	.24½ -	.25½
C-50* (dlvd.)	lb.	.13⅞ -	.14⅜
RA* (dlvd.)	lb.	.26½ -	.27½
RA-10* (dlvd.)	lb.	.26½ -	.27½
RA-NC* (dlvd.)	lb.	.26½ -	.27½
RC* (dlvd.)	lb.	.09¼ -	.09¾
RC-HT* (dlvd.)	lb.	.09 -	.09½
Unitane O-110*	lb.	.25½ -	.26½
O-220*	lb.	.25½ -	.26½
O-310*	lb.	.25½ -	.26½
O-410*	lb.	.25½ -	.26½
OR-150*	lb.	.27½ -	.28½
OR-250*	lb.	.27½ -	.28½
OR-340*	lb.	.27½ -	.28½
OR-342*	lb.	.27½ -	.28½
OR-350*	lb.	.27½ -	.28½
OR-540*	lb.	.27½ -	.28½
OR-640*	lb.	.27½ -	.28½
Zopaque*	lb.	.24½ -	.25½
R*	lb.	.26½ -	.27½

White—Zinc Oxide (American Process)

AZO-DOX 44, 45	lb.	.1450 -	.1550
AZO-ZZZ 11* (22*, 33*, 44*, 55*)	lb.	.1450 -	.1550
Eagle-Picher AAA*	lb.	.1450 -	.1550
Horse Head Special*	lb.	.1450 -	.1550
XX*	lb.	.1450 -	.1550
Protox 166*	lb.	.1450 -	.1550
167*	lb.	.1450 -	.1550
267* (pelleted)	lb.	.1450 -	.1550
St. Joe Black Label*	lb.	.1450 -	.1550
Green Label*	lb.	.1450 -	.1550
Red Label*	lb.	.1450 -	.1550
Pelleted	lb.	.1450 -	.1550

White—Zinc Oxide (Dispersed)

Dispersed Zinc Oxide	lb.	—— -	.13

White—Zinc Oxide (French Process)

AZO-ZZZ 66	lb.	.1450 -	.1550
Florence Green Seal*	lb.	.1625 -	.1725
Red Seal*	lb.	.1575 -	.1675
White Seal*	lb.	.1675 -	.1775
Kadox 25*	lb.	.1675 -	.1775
15*, 17*, 72* & 515*	lb.	.1450 -	.1550
Protox 168*	lb.	.1450 -	.1550
169*	lb.	.1450 -	.1550
268* (pelleted)	lb.	.1450 -	.1550
U.S.P. (cartons)	lb.	.1775 -	.1875
XX-78*	lb.	.1450 -	.1550

White—Zinc Sulfide

Cryptone ZS*	lb.	.2530 -	.2630
Lehigh 35%*	lb.	.1550 -	.1650
50%*	lb.	.1585 -	.1683

Yellow

Akron Masterbatch*	lb.	1.12 -	2.18
Toners*	lb.	2.10 -	6.00
Benzidene-Lightfast	lb.	3.25 -	5.10
Benzidine Yellow	lb.	2.35 -	2.45
Cadmolith Yellow (dms.)	lb.	1.12 -	1.20
Chrome Yellow	lb.	—— -	.35
Cooke M.B. Yellow 405*	lb.	2.15 -	2.75
105*	lb.	—— -	2.15
Disco Yellows	lb.	2.05 -	3.95
Iron Oxide, Pure Light Shades	lb.	.12 -	.12¼
Dark Shades	lb.	.11¼ -	.11¾
Mapico Yellow* (50 lb. bags)	lb.	.12 -	.12¼
Rubber Dispersed Yellows	lb.	1.27 -	2.13
Rubber Yellow GD* (disp.)	lb.	—— -	2.25
GL*	lb.	—— -	1.68
Rubber Yellow X-1940*	lb.	—— -	2.35
Stan-Tone Cadmium Dry*	lb.	2.80 -	3.03
Cadmium Paste*	lb.	1.63 -	1.99
MBS*	lb.	1.30 -	2.20
GPE*	lb.	4.25 -	4.50
PC*	lb.	.55 -	3.40
Sumatra Yellow X-1940*	lb.	—— -	2.45
Toluidine Yellow	lb.	2.00 -	2.10
YL-660 D*	lb.	1.25 -	1.35
Oximony Iron Oxide	lb.	.12¾ -	.13
Vansul Yellow M.B.*	lb.	1.00 -	2.00
Yellow Powders	lb.	2.00 -	5.00
Zinc Yellow	lb.	—— -	.29

DISPERSING AGENTS

Anchoid*(†)	lb.	.24 -	.25
Anhydrapent*	lb.	.56 -	.59
Armeen 18*	lb.	.39 -	.45
Blancol*	lb.	—— -	.15¼
Darvan No. 1* (and No. 2*)	lb.	.22 -	.30
Daxad 11* (21*, 23*)	lb.	.08 -	.30
Diethanolamine (dms., dlvd.)	lb.	.24½ -	.27½
Dispersaid*	lb.	1.25 -	1.35
Emcol K-8300* (dms.)	lb.	.14 -	.18
P10-59	lb.	.32 -	——
5120	lb.	.31 -	——
5138	lb.	.31 -	——
Emulphor ON-870*	lb.	—— -	.55
Furalx*	lb.	.06½ -	.07½
Halloid*	lb.	.04½ -	.05½
Hycryl A-1000*	lb.	.09 -	.09½
Igepal CO-630*	lb.	—— -	.29
Igepon T-73*	lb.	—— -	.29½
Kyro EO* (dms.)	lb.	—— -	.29¾
Leonil SA*	lb.	—— -	.55
Lomar PW*	lb.	—— -	.18
Marasperse C*	lb.	.06¼ -	.06¾
CB*	lb.	.13 -	.15
N*	lb.	.09½ -	.10½
Monoethanolamine (dms., dlvd.)	lb.	.25 -	.28
Naccotan A*	lb.	.16½ -	.17
Nekal BA-75*	lb.	—— -	.40
BX-78*	lb.	—— -	.64
Nopco 1187-X*	lb.	.15 -	.16
Pluronic F68*	lb.	.38½ -	.44
Polyfon*	lb.	.08 -	.09
R & R 551*	lb.	—— -	.28
Rubbex*	lb.	.247 -	.277
Stablex B*	lb.	.50 -	.95
Stan-Chem BQC*	lb.	.12¼ -	.17¼
1067*	lb.	—— -	.13½
1471*	lb.	.1687 -	.2187
2251*	lb.	.12¼ -	.17¼
Trenamine D-25*	lb.	.32½ -	.36
Triethanolamine (dms., dlvd.)	lb.	.22 -	.25
Yelkin TT* (and TTS*)	lb.	.13 -	.16

EXTENDERS

Arcco 1071-13B*	lb.	.14½ -	.15½
1073-18B*	lb.	.13½ -	.14½
1294-36B*	lb.	.11½ -	.12½
Car-Bel-Ex-A* (and B*)	lb.	—— -	.14
Extender 600*	lb.	—— -	.1765
Facile Gum 4A*	lb.	.48 -	.50
Millex*	lb.	—— -	.07
W*	lb.	—— -	.07
Nopco 2271*	lb.	.15½ -	.16½
Polyco 418*	lb.	.17 -	.18
PR-162 Latex Extender*	lb.	—— -	.182
Solvitose HDF*	lb.	.22 -	.25
Synprolac*	lb.	.16 -	.23
Synprowax*	lb.	—— -	.23
Vistanex MM Grades*	lb.	—— -	.35

FILLERS (Inert and Reinforcing)

Abrasives			
Carbonite*	lb.	.21½ -	1.35
Lionite*	lb.	.16 -	1.27
Pumice	lb.	.03 -	.05
Walnut Shell Grits	lb.	.05 -	.08
Aluminum Hydrate	lb.	.0850 -	.1200
Kaiser Alumina*	lb.	.026 -	.059
Aluminum Silicate			
AFD*	ton	26.50 -	60.00
Aluminum Flake*	ton	23.50 -	32.50
Marter White*	ton	18.50 -	30.00
Barium Carbonate (l.c.l.)	ton	101.50 -	121.50
Barytes			
No. 1 Floated, White*	ton	45.00 -	65.10
No. 2 Floated, Unbleached*	ton	43.00 -	63.10
No. 22 Barytes* (c.l.)	ton	—— -	30.00
No. 3805 Barytes*	ton	22.00 -	26.75
Foam A*	ton	—— -	55.00
Sparmite*	ton	80.00 -	85.00
XIOR*	ton	80.00 -	85.00
Bentonite (c.l.)	ton	—— -	13.50
Argosite Clay* (c.l.)	ton	—— -	12.50
Bennett Clay* (c.l.)	ton	—— -	32.50
SPV Volclay* (c.l.)	ton	—— -	12.50
White Hi-Gel*	ton	—— -	65.90
Blanc Fixe	ton	72.50 -	120.00
Calcium Carbonate			
Atomite* (c.l.)	ton	—— -	32.50
B.I. White No. 1 (c.l.)	ton	—— -	9.00
Calcene NC*	ton	72.50 -	92.50
TM*	ton	75.00 -	95.00
Calwhite*	ton	—— -	20.00
Camel-Carb*	ton	—— -	12.00
Camel-Tex*	ton	—— -	20.00
Camel-Wite*	ton	—— -	32.50
Duramite*	ton	—— -	20.00
Gamaco* (c.l.)	ton	—— -	32.50
Georgia Marble 5-25* (c.l.)	ton	—— -	20.00
No. 10 White* (c.l.)	ton	—— -	11.00
Kalite*	ton	50.00 -	65.00
Laminar*	ton	—— -	30.00
Lexamite* (c.l.)	ton	—— -	27.50
Lorite*	ton	30.00 -	36.00
Millical*	ton	38.00 -	53.00
Multifex MM*	ton	110.00 -	125.00
Non-Fer-Al*	ton	32.50 -	37.50
Purecal M*	ton	56.75 -	80.75
SC* (and T*)	ton	110.00 -	125.00
U*	ton	120.00 -	135.00

FILLERS (Cont'd)

Calcium Carbonate (cont'd)			
Rambo No. 1*	ton	—— -	16.50
Snowflake*	ton	17.00 -	20.00
Super Multifex*	ton	160.00 -	175.00
Surfex*	ton	37.50 -	52.50
Suspenso*	ton	35.50 -	50.50
Witcarb Reg.*	ton	56.75 -	85.00
P*	ton	110.00 -	140.00
R*	ton	120.00 -	150.00
RC*	ton	110.00 -	140.00
York White*	ton	—— -	10.50
Calcium Silicate Silene EF*	ton	120.00 -	140.00
Calcium Sulfate, Anhydrous Snow White Filler*	ton	—— -	21.00
Calcium Sulfate Hydrous Terra Alba No. 1*	ton	—— -	17.00
Chalk Whiting (l.c.l.)	lb.	.01½ -	.01¾
Recco Paris Whiting*	ton	—— -	35.00
OMYA Whiting*	ton	—— -	30.00
Clay			
Afton Clay*	ton	12.00 -	35.50
Aiken Clay*	ton	14.50 -	——
Alsilite* (c.l.)	ton	30.00 -	45.00
Aluminum Flake*	ton	23.50 -	30.00
Buca* (c.l.)	ton	—— -	45.00
Burgess No. 20*	ton	—— -	35.00
No. 30*	ton	—— -	37.00
Burgess Iceberg*	ton	—— -	50.00
Catalpo* (c.l.)	ton	—— -	35.00
Champion*	ton	—— -	14.50
Crown*	ton	—— -	14.00
Dixie* (c.l.)	ton	—— -	14.00
Franklin Clay—R* (c.l.)	ton	15.00 -	39.00
G. K. Soft*	ton	11.00 -	28.00
Harwick Clays*	ton	14.50 -	57.00
Hi-White R*	ton	—— -	13.50
Kaolloid Clay* (c.l.)	ton	—— -	10.50
LGB*	ton	—— -	17.00
LGP*	ton	—— -	19.00
McNamee* (c.l.)	ton	—— -	13.50
Natka 1200 (c.l.)	ton	—— -	13.00
Par* (c.l.)	ton	—— -	12.00
Paragon*	ton	—— -	13.50
Pigment 5*	ton	23.50 -	26.50
33*	ton	—— -	37.00
Recco* (c.l.)	ton	—— -	14.00
Swanee Clay*	ton	—— -	12.50
Snobrite*	ton	—— -	12.50
Suprex*	ton	—— -	14.00
Whitetex* (c.l.)	ton	—— -	50.00
4200 Clay*	ton	13.00 -	——
Diatomaceous Earth	ton	30.00 -	50.00
Kaylorite* (c.l.)	ton	—— -	30.00
Lorite*	ton	—— -	36.00
Flock			
Cotton (White)	lb.	.28 -	.32
Colored	lb.	.11 -	.13½
Filfloc F 40-9000*	lb.	—— -	.13
F 6000*	lb.	—— -	.36
Polycel*	ton	110.00 -	210.00
Rayon, Bleached or Dyed	lb.	.75 -	1.20
Rayon, Grey	lb.	—— -	.18
Rayon, Pink	lb.	—— -	.20
Solka-Floc* (l.c.l.)	lb.	.07 -	.16
Glue, Amber	lb.	.17 -	.19
Ground Softwood Bark Silvacon* (c.l.)	ton	55.00 -	100.00
Leather			
Flour (dust)	lb.	.12 -	.15
Shredded	lb.	.05 -	.17
Lignin	lb.	.06 -	.08
Indulin*	lb.	.06 -	.08
Limestone, Pulverized	ton	3.00 -	5.00
Asbestol Regular*	ton	27.00 -	29.00
Asbestol Superfine*	ton	32.00 -	34.00
Georgia Marble No. 10*	ton	—— -	11.00
Industrial Filler No. 100*	ton	—— -	5.75
Micro Velva A*	ton	49.00 -	51.00
L*	ton	57.00 -	59.00
No. 1 White*	ton	—— -	10.00
Magnesium Carbonate	lb.	.12½ -	.15
K & M Clearcarb*	lb.	—— -	.14
Technical* (c.l., eqld.)	lb.	.10½ -	.12
Marinco CL*	lb.	—— -	.17
Magnesium Silicate (see Talc)			
Mica	lb.	.01¼ -	.07¼
Concord*	lb.	.08 -	.08¾
Micro-Mica*	lb.	.08 -	.08¾
Mineralite* (c.l.)	ton	40.00 -	85.00
Silversheen*	lb.	.08 -	.08¾
Triple A Mica* (c.l.)	ton	—— -	30.00
Vermiculite*	lb.	—— -	.11
Wet Ground Biotite Mica	lb.	.06½ -	.07¼
Wet Ground Mica No. 160*	lb.	.08 -	.08¾
Pecan Shell Flour Stan Shell*	ton	45.00 -	75.00
Pyrophyllite			
No. 261*	ton	—— -	11.50
Pyrax A* (c.l.)	ton	—— -	13.50
WA* (c.l.)	ton	—— -	16.00
Sawdust, Graded	ton	14.00 -	35.00
Silica	ton	16.00 -	27.00
Extra Fine (bags) (c.l.)	ton	—— -	43.00
Slate, Powdered (l.c.l.)	ton	15.00 -	20.00
Lo-Micron Slate Flour*	lb.	—— -	.04½
No. 133 Slate Flour*	ton	—— -	4.55
Sodium Silico Aluminate Zeolex 23*	ton	120.00 -	140.00

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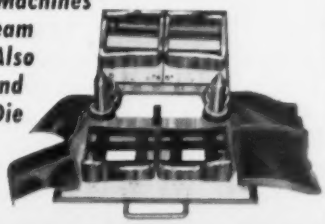

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FILLERS (Cont'd)

Talc (Magnesium Silicate)			
Asbestol Regular*	ton	—	27.00
Eastern RC-500*	ton	—	32.00
No. 41*	ton	—	19.70
No. 549*	ton	—	63.00
French*	ton	—	59.00
L.S. Silver*	ton	33.75	38.75
No. 367*	ton	—	13.00
No. 1600*	ton	—	70.60
No. 1768*	ton	—	13.00
Nytal 200* (c.l.)	ton	—	28.00
300* (c.l.)	ton	—	38.00
Sierra Fibrene C-400*	ton	33.00	38.00
Supreme 325*	ton	46.25	57.25
Sierra White*	ton	20.75	31.75
Soapstone*	ton	—	13.00
Walnut Shell Flour	ton	55.00	100.00
Stan-Shell*	ton	50.00	84.00
Whiting, Commercial	ton	—	7.50
Allied Whiting*	ton	10.50	21.50
Camel-Carb*	ton	—	10.00
Calwhite (c.l.)	ton	—	20.00
C-C-O White*	ton	—	22.00
Georgia Marble No. 15*	ton	—	20.00
No. 16*	ton	—	20.00
Pigua No. 1 YAA* (c.l.)	ton	1.00	10.00
No. 2 LS* (c.l.)	ton	1.00	10.00
Snowflake* (c.l.)	ton	—	20.00
Stan-White 325*	ton	11.50	14.10
Veroc* (c.l.)	ton	—	10.50
Welco* (c.l.)	ton	—	10.50
York White R* (c.l.)	ton	—	10.00
Wood Flour	ton	31.50	48.00

FINISHING MATERIALS, SURFACE

Beaco Finishes*	gal.	2.10	2.35
Black Out*	gal.	4.50	8.00
Shellac, Orange Gum	lb.	.50	.60
VanWax*	gal.	1.45	1.50

FLAME RETARDANTS

Cellulflex CEF* (dms.)	lb.	—	.65
Chlorowax 40*	lb.	.15¼	.17¼
50*	lb.	.16¼	.17¼
70*	lb.	.18½	.20
Halowax*	lb.	.36	.46
Zinc Borate 3167*	lb.	.1920	.2020
Zyrox Compounds*	lb.	.38	.95½

LATEX MODIFIERS

Ludox	lb.	.15	.16¼
OPD-101*	lb.	—	.28
Piccopale A-1 Emulsion	lb.	.086	.107
Ubatol U-2001* (dms.)	gal.	1.84	1.87

LUBRICANTS, MOLD

Akro Gel*	lb.	—	.165
Alipal CO-433*	lb.	—	.20
CO-436*	lb.	—	.24
Aluminum Stearate Crown Brand*	lb.	.37	.42
Amine, Mixed Crude*	lb.	.19	.25
Aquadag*	lb.	3.50	4.00
Aquarex D*	lb.	—	.78
E*	lb.	—	.94
ME*	lb.	—	.80
MDL*	lb.	—	.33
WAQ*	lb.	—	.22
Armeen HT*	lb.	.34	.40
180*	lb.	.52	.56
Armid HT (flaked)*	lb.	.42	.46
0*	lb.	.39	.41
Borax, Granular (l.c.l.)	ton	89.00	94.00
Carbowax 4000*	lb.	.31	.32
CD Mold Release B*	gal.	5.00	—
B-2*	gal.	5.00	—
Colite Concentrate* (dms.)	gal.	.90	1.15
Colite D43D*	gal.	1.15	1.40
Concentrex*	lb.	—	.25
Dag Dispersions No. 197*	lb.	1.85	2.90
D.C. 7 Compound*	lb.	5.13	6.50
D.C. Emulsion No. 7*	lb.	1.59	2.07
No. 8*	lb.	1.22	1.76
No. 35*	lb.	1.22	1.76
No. 35A*	lb.	1.22	1.76
No. 35B*	lb.	1.22	1.76
No. 36*	lb.	1.22	1.76
D.C. Mold Release Fluid*	lb.	3.14	4.75
Dri-Lube*	lb.	—	.22
Emulsion Lubricant A80*	lb.	—	1.80
45*	lb.	—	1.80
G-E Silicone Emulsion SM-55*	lb.	1.22	1.76
SM-61*	lb.	1.22	1.76
SM-62*	lb.	1.22	1.76
G-E Silicone Fluid SF-93*	lb.	3.14	4.25
SF-96*	lb.	3.14	4.25
Glydag G*	lb.	1.30	2.45
Hawkeye Flake* (dlvd.)	lb.	.15	.15¾
HSC No. 35*	lb.	1.22	2.46
No. 515	lb.	1.22	2.46
Igepal CO-430*	lb.	—	.29
CO-630*	lb.	—	.29
CO-530*	lb.	—	.29
Igepon AP-78*	lb.	—	.48
T-33*	lb.	—	.21
T-51*	lb.	—	.13½
Kokobace R*	lb.	.17½	.18½
Lubrex	lb.	.25	.30
Lubri-Flo*	gal.	10.00	12.00
Migralube*	lb.	—	.35
ML-1027-2C*	gal.	—	2.15
ML-1028-2C*	gal.	—	2.15
Mold Lubricant No. 72 Conc.* (dms.)	gal.	—	1.90

LUBRICANTS, MOLD (Cont'd)

Mold Lubricant No. 735* (dms.)	gal.	—	1.25
No. 769* (dms.)	gal.	—	1.20
No. 825* (dms.)	gal.	—	2.00
No. 856* (dms.)	gal.	—	1.90
No. 880* (dms.)	gal.	—	1.19
No. 887* (dms.)	gal.	—	1.80
No. 896* (dms.)	gal.	—	1.28
No. 935* (dms.)	gal.	—	1.56
No. 956* (dms.)	gal.	—	2.50
No. 965* (dms.)	gal.	—	2.15
No. 967* (dms.)	gal.	—	2.40
No. 969* (dms.)	gal.	—	1.50
No. 975* (dms.)	gal.	—	2.85
No. 980* (dms.)	gal.	—	1.53
No. 987* (dms.)	gal.	—	2.45
Moldeze No. 3*	gal.	—	4.95
Mold-Brite*	gal.	—	1.50
Monopole Oil MD*	lb.	—	.16
Olate Flakes*	lb.	.22	.23
Orvus WA Paste* (dms.)	lb.	—	.22
Plaskon Polyethylene S*	lb.	.32	.47
Poly-Brite PE-20	lb.	.28	.42
600	lb.	.42	.58
Poly-Cone 125X	lb.	1.22	1.40
1,000	lb.	.94	1.06
Polyglycol 15-200*	lb.	.25	.28¾
E4000*	lb.	.31	.37
Prodag*	lb.	.28	.42
Purity Flake* (dlvd.)	lb.	.18	.19¼
Rubber-Flo*	gal.	1.25	2.00
Rubber-Glo*	gal.	—	.94
Rusco Mold Paste*	lb.	—	.25
Sericite* (l.c.l.)	ton	65.00	75.00
Silicone Oil A145*	lb.	3.18	3.61
Silrex (dms.)	lb.	—	.65
A65*	lb.	2.50	2.75
Soybean Lecithin	lb.	.13	.17
Thermalube*	lb.	—	.13¾
UC Silicone L-45*	lb.	3.14	4.75
L-522*	lb.	3.05	4.05
LE-45*	lb.	1.22	1.70
LE-450*	lb.	1.22	1.70
Ucon Lubricants*	lb.	.26¼	.27¾
Ulco Mold Soap*	lb.	.15	.29

LUBRICANTS, RUBBER

Diglycol Stearate Neutral (and SE) (dms.)	lb.	—	.25
Extrud-o-Lube*	gal.	1.33	1.54
G.B. Naphthenic Neutrals*	gal.	.11	.18
Ivory Chips*	lb.	.18¼	.19¼
Latex-Lube GR* (dlvd.)	lb.	.19¼	.20
No. 82-A* (450 lb. dms.)	lb.	—	.08½
Propylene Stearate (dms.)	lb.	.35	.60

LUBRICANTS, RUBBER SURFACE

Barium Stearate	lb.	.41	.46
Calcium Stearate	lb.	.39	.44
Crown Brand*	lb.	.37	.42
D.C. 7 Compound*	lb.	5.13	6.50
D.C. 200 Fluid*	lb.	3.14	4.75
ELA*	lb.	—	.82
G-E Silicone Fluid SF-92*	lb.	3.14	4.25
Glycerized Lubricant*	gal.	1.25	1.48
Glydag B*	lb.	1.50	2.10
G*	lb.	1.30	2.45
Glyso-Lube* (dms.)	lb.	—	.14
No. 3* (dms.)	lb.	—	.14
HSC No. 35*	lb.	1.28	1.34
No. 515*	lb.	1.28	1.34
Hydro-Zinc*	lb.	—	.20
Latex-Lube Pigmented* (dlvd.)	lb.	.17¼	.18¼
R-66*	lb.	—	.16½
Liqui-Lube* (dlvd.)	lb.	—	.16¼
N.F.* (dlvd.)	lb.	—	.16¾
N.T.* (dlvd.)	lb.	—	.16¾
Lubrex*	lb.	.25	.30
Lubri-Cote	gal.	.86	1.00
Magnesium Stearate Crown Brand*	lb.	.40	.45
Polyethylene Glycol	lb.	.22	.26
Rubber Free (Concentrate)*	gal.	—	1.44
Jel*	lb.	.18	.21½
Slab-Dip* (dms.)	lb.	—	.15
Soybean Lecithin	lb.	.13	.17
Stock-Lube*	lb.	—	.19
UC Silicone L-45*	lb.	3.14	4.75
L-522*	lb.	3.05	4.05
LE-450*	lb.	1.22	1.70
Zinc Stearate	lb.	.41	.46

MOLD CLEANERS

Actusol* (dlvd.)	gal.	1.45	1.65
Alkon* (dlvd.)	lb.	.16	.16½
CA-301*	gal.	—	2.49
CA-302*	gal.	—	2.63
G-O 6910*	lb.	.38	.40
Metso Anhydrous*	cwt.	5.70	7.95
Metso 99*	cwt.	5.00	7.25
200*	cwt.	6.70	8.95
Granular*	cwt.	4.45	6.70
Orvus Extra Granules*	lb.	.22½	.23½
Rubber-Sol*	gal.	2.97	3.97
Sprex A.C.* (dlvd.)	lb.	.17¼	.18¾
Zip Mold Cleaner*	gal.	.95	1.45

PEPTIZING AGENTS

Peptizer P-12*	lb.	.95	1.25
Pepton 22 Plasticizer*	lb.	.81	.84
65*	lb.	1.20	1.23
65B*	lb.	.81	.84

PEPTIZING AGENTS (Cont'd)

RPA 2*	lb.	—	.82
3*	lb.	—	.48
3 Conc.*	lb.	—	.85
5*	lb.	—	.68
6*	lb.	—	1.62

PLASTICIZERS & SOFTENERS

Acto 500*	lb.	—	.09
Adipol BCA*	lb.	.45	.45½
2EH*	lb.	.42½	.43½
10A*	lb.	.42½	.43½
ODY*	lb.	.43½	.46½
810*	lb.	.42½	.45½
XX*	lb.	.42½	.43½
Aomex 562 (dms.)	lb.	.50½	.51
710 (dms.)	lb.	.35½	.36
711 (dms.)	lb.	.37½	.38
744 & 745 (dms.)	lb.	.41½	.42
760 (dms.)	lb.	.59½	.60
761 (dms.)	lb.	.46½	.47
Anhydrol 6990*	lb.	.51	.56
Arneel SD*	lb.	.34	.40
Arolene 1980* (c.l.)	lb.	—	.10
Aromatic Plasticizer 10* (and 25*) (dms.)	lb.	.05	.06½
Aromatic Tar	gal.	.0573	.1973
Bardol*	lb.	.02¾	.03¾
B*	lb.	.06¼	.06½
Bayol D*	gal.	—	.382
F*	gal.	—	.52
Beeswax, Bleached	lb.	.76	.79
Yellow Refined	lb.	.68	.70
Bondogen*	lb.	.55½	.60½
B.R.C. No. 20*	lb.	.0150	.0175
No. 21*	lb.	.02¼	.03
No. 22*	lb.	.02½	.02¾
B.R.H. 2*	lb.	.0213	.0351
BRS 700*	lb.	.0200	.0283
B.K.T. 3*	lb.	.0180	.0265
4*	lb.	.0250	.0269
7*	lb.	.0300	.0310
B.R.V.*	lb.	.0475	.0565
Bunarex Resins*	lb.	.07	.08
Bunatak AH*	lb.	—	.09½
N*	lb.	—	.31
U*	lb.	—	.17½
No. 90*	lb.	—	.09
No. 210*	lb.	—	.14
Butac*	lb.	.12½	.13½
Butyl Carbitol Perlargonate (dms.)	lb.	—	.64½
Butyl Cellosolve Perlargonate (dms.)	lb.	—	.68
Butyl Oleate	lb.	.25½	.26½
Butyl Palmitate	lb.	—	.26½
Butyl Stearate (dms.)	lb.	.24½	.25½
BWH-1*	lb.	.16	.17
Cabflex DDA*	lb.	.40	.43½
DDP*	lb.	.29½	.33
Di-BA*	lb.	.41	.44½
Di-OA*	lb.	.40	.43½
Di-OP*	lb.	.28½	.32
Di-OZ*	lb.	.45½	.49
DOA*	lb.	.40	.43½
DOP*	lb.	.28½	.32
HS-10	lb.	.44	.47½
ODA*	lb.	.40	.43½
ODP*	lb.	.29	.32½
TCP*	lb.	.34½	.38
Califlux 510* (and 550*)	lb.	.03½	.03¾
G.P.*	lb.	.02¼	.02½
R-100*	lb.	.05½	.05¾
TT*	lb.	.0270	.0295
Candelilla Wax, Prime	lb.	.70	.74
Refined Light	lb.	.73	.78
Carbowax 4000* (dms.)	lb.	.31	.32
Carnauba Wax, Crude	lb.	.71	.77
Flaked	lb.	.72	1.55
Refined, Technical	lb.	.72	.80
Refined, Pure	lb.	.80	.86
Yellow	lb.	1.42	1.45
Celluflex* (dms.) 112* (t.c., dlvd.)	lb.	—	.34½
179-A* (t.c., dlvd.)	lb.	—	.32½
179-C* (t.c., dlvd.)	lb.	—	.32½
179-EG* (t.c., dlvd.)	lb.	—	.32½
DBP* (t.c., dlvd.)	lb.	—	.30
DOP* (t.c., dlvd.)	lb.	—	.28½
TPP* (dms., eqld.)	lb.	—	.40
Ceresin Wax	lb.	.12	.30
Chlorowax 40*	lb.	.15¼	.17¼
50*	lb.	.16¼	.17¼
70*	lb.	.18½	.20
LV*	lb.	.17¼	.19¼
CTLA Polymer*	gal.	.20	.36
Cumar Resins*	lb.	.07	.19
Darex DBP*	lb.	.30	.33
DOP*	lb.	.30½	.33½
DIOP*	lb.	.30½	.33½
D.B.M.*	lb.	.32	.34¼
Decylbutyl Phthalate	lb.	.27	.29½
Degras, Common	lb.	—	.14
Diallyl Phthalate	lb.	.51¼	.52½
Dibenzyl Sebacate	lb.	.88	.89½
Dibutoxyethyl Sebacate	lb.	—	.56¾
Dibutyl Phthalate	lb.	.30	.33½
Dibutyl Sebacate	lb.	.64½	.66
Dicapryl Adipate	lb.	.42	.44
Dicapryl Phthalate	lb.	.29½	.31
Dicapryl Sebacate	lb.	.58	.59½
Di-Carbitol Phthalate (dms.)	lb.	.47	.47¼
Dicyclohexyl Phthalate	lb.	.58¼	.59¼
Diethyl Phthalate (t.c.)	lb.	.25	.27¾
Di-2-ethylhexyl Phthalate	lb.	—	.30½
Dihexyl Adipate	lb.	.40	.42½
Dihexyl Phthalate	lb.	.30	.32½

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PLASTICIZERS & SOFTENERS (Cont'd)

Dihexyl Sebacate	lb.	.65	.74
Diisobutyl Azelate	lb.	—	**.47½**
Di-iso-octyl Adipate	lb.	.40	.42½
Di-iso-octyl Phthalate (t.c.)	lb.	.28	.31½
Dimethyl Phthalate (t.c.)	lb.	.27½	**.30¼**
Dimethyl Sebacate	lb.	1.30	1.39
Dinonyl Adipate	lb.	**.44½**	**.47½**
Dinopol 235*	lb.	.36	.37
DDO*	lb.	.31	.32
MOP*	lb.	.33½	.34½
Dioctyl Adipate	lb.	.40	.42½
Dioctyl Phthalate (dms.)	lb.	.30½	.31½
Dioctyl Sebacate (dms.)	lb.	.58½	.60
D.I.O.P. (dms.)	lb.	.31	.32
Dipolymer Oil	gal.	**.33**	**.48**
Dispersing Oil No. 10*	lb.	**.06**	**.06¼**
Dutrex 6*	gal.	—	.11
15E*	gal.	—	.10
Elastex 10-P*	lb.	**.30½**	**.33½**
50-B*	lb.	**.25**	**.28**
DCHP*	lb.	.59	.60
Emulphor EL-719*	lb.	—	.58
Epoxy Plasticizer	lb.	**.33½**	**.36**
Drapex 3.2*	lb.	.39¼	.44
Drapex 4.4*	lb.	.37	.42
Esparto Wax	lb.	—	.55
Estac*	lb.	—	**.16**
Facile Gum 4A*	lb.	.48	.50
Flexol B-400*	lb.	.27½	.28¼
DOP*	lb.	.33	.34
TOF*	lb.	.45¼	.46½
3GH*	lb.	.46	.46¾
3GO*	lb.	.55	.55¾
4GO*	lb.	.35	.36
426*	lb.	.29½	.30½
Flexricin P-1*	lb.	—	**.32**
P-4*	lb.	—	.34¼
P-6*	lb.	—	.41½
P-8*	lb.	—	.34¼
Fortex A* (dms.)	lb.	.12½	.14½
Galex W-100*	lb.	.15½	**.19¾**
G.B. Asphaltic Flux*	gal.	.23	.25
G.B. Light Process Oil*	lb.	.0157	.0177
Medium Process Oil*	lb.	.03½	.03¾
G.B. Naphthenic Neutrals*	lb.	.04½	.04¼
Good-rite GP233*	lb.	.40	.43½
GP235*	lb.	.40	.43½
GP236*	lb.	.40	.43½
GP261*	lb.	.28	.31½
GP265*	lb.	.28½	.32
GP266*	lb.	.29	.32½
GP-266-BPA*	lb.	.29	.32½
Harflex 500* (dms.)	lb.	.31¼	.34
HB20*	lb.	.15	.17
HB40*	lb.	.19	.22
Herron H.T.*	gal.	.16	**.27**
Herron Plas*	lb.	—	**.03¾**
Herron Wax*	lb.	**.05¼**	**.06**
No. 23*	lb.	**.08¼**	**.08¾**
No. 24*	lb.	**.07¼**	**.07¾**
HSC No. 13*	lb.	.25	.32
No. 28 and 38*	lb.	.20	.27
Indonex 632½* (633½*, 634½*, 637½*)	gal.	.12	.19
Isooctyl Decyl Phthalate	lb.	.28½	.38
Kapsol*	lb.	.35	.35½
Kenflex*	lb.	.18	.27
Kesscoflex 101* (dms.)	lb.	—	.37½
103* (dms.)	lb.	—	.38
MCO* (dms.)	lb.	—	.35½
BCL* (dms.)	lb.	—	.37½
MCP* (dms.)	lb.	—	.41
BCP* (dms.)	lb.	—	.36
KP 23*	lb.	.31½	.32½
90*	lb.	.42½	.43½
140*	lb.	.48	.48½
201*	lb.	.58	.59
220*	lb.	.34½	.35½
555*	lb.	.56½	.57
Kremol 40*	gal.	**.36**	.46
50*	gal.	**.39**	.49
Kronisol* (dms.)	lb.	.33	.36
Kronitex AA* (dms.)	lb.	.35	.36
1* (dms.)	lb.	.35	.36
K-3*	lb.	.35	.36
MX*	lb.	.35	.36
Lanolin, Tech. Anhydrous	lb.	—	.26
Latex-Lube G.R.*	lb.	.19¼	.20
Lead Oleate	lb.	—	.29¾
Lindol* (dms., t.c.)	lb.	—	.32½
Locusol No. 1-6980*	lb.	.30	.34
2-Mercaptoethanol (dms.)	lb.	**1.25**	1.50
Methox*	lb.	.40½	.41
Methyl Laurate	lb.	**.25**	.27
Methyl Oleate	lb.	—	.20
Methyl Stearate (dms.)	lb.	—	.30
Monoplex DOS*	lb.	.59½	.60½
DBS*	lb.	.65½	.66½
S-70*	lb.	.41	.42
S-71*	lb.	.46½	.47½
Montan Wax, Crude	lb.	.26	.35
Flaked	lb.	.29	.40
Morflex*	lb.	**.32**	**.69½**
MR 2088* (dms.)	lb.	—	**.19**
Natac*	lb.	.12	.13
Nebony Resins* (dms.)	lb.	.04½	.05
Neolene 210* (t.c.)	lb.	—	**.16**
212* (t.c.)	lb.	—	**.14**
220* (t.c.)	lb.	—	**.15**
Nerium*	lb.	—	.09
Nevillac Resins* (dms.)	lb.	**.31**	.85
Neville LX-880* (dms.)	lb.	.12	.13½
LX-685* (dms.)	lb.	.12½	.17½
Neville Resins* (dms.)	lb.	.07¼	.20
Nevindene Resins* (dms.)	lb.	.16½	.20
Nevinol* (dms.)	lb.	—	.24

PLASTICIZERS & SOFTENERS (Cont'd)

Nuba 1* (and 2*) (dms.)	lb.	.06¼	.06¼
No. 480 Oil Proof Resin*	lb.	—	**.18**
Ohopex Q10* (dms.)	lb.	.32	.33
R9* (dms.)	lb.	.37¾	.37¾
Ortho-Nitrobiphenyl	lb.	**.13**	**.15**
Ozokerite Wax, White and Yellow	lb.	.24	.31
Paradene Resins (dms.)	lb.	.07¼	.08
No. 2 Flaked	lb.	.08	.08½
Para Flux* (dms.)	gal.	.22	.25
2016* (dms.)	gal.	.22	.26
Para Lube* (t.c.l.)	lb.	.046	.048
Paraplex G-25*	lb.	.76	.77
G-40*	lb.	.50	.51
G-50*	lb.	.40¾	.41¾
G-53*	lb.	.45	.46
G-60* (and G-61*)	lb.	.35	.36
G-62*	lb.	.37	.38
Parmo*	lb.	**.06**	**.13½**
Pepton 22 Plasticizer*	lb.	.81	.84
PG-16*	lb.	—	**.35**
Philrich-5* (t.c.)	gal.	—	**.11**
Picco 10* (and 25*)	lb.	.15	.17
60* (and 75*)	lb.	.15	.17
100*	lb.	.15	.17
Piccocizer 30*	lb.	**.05½**	**.07**
Piccolastic A* (B*, C*, D* & E*)	lb.	**.28**	**.29**
FT* (FHF* & FX*)	lb.	.1815	.1965
T-135*	lb.	**.22¾**	**.23¼**
Piccolyte S Resins*	lb.	.20½	.22¾
Piccopale Resins*	lb.	.12	.13
Piccoumaron Resins*	lb.	.07	.24½
Pigmentar*	lb.	**.0460**	**.0745**
Pigmentarol*	lb.	**.0460**	**.0745**
Plastac M*	lb.	—	**.09¼**
Plasticizer 2286*	lb.	—	**.26¼**
Plasticizer 4141*	lb.	.42½	.43½
Plasticizer DP-200, DP-250, DP-520*	lb.	.42¼	.46¼
Plasticizer LP*	lb.	—	.07
Plasticizer MP*	lb.	—	.08
Plasticizer MT-511*	lb.	—	**.68¾**
Plasticizer ODN*	lb.	.35	.41
Plasticizer SC*	lb.	.42½	.43½
Plasticizer W-13*	lb.	**.37**	**.38¾**
Plastoflex 3*	lb.	—	**.52**
32*	lb.	.37¾	.38¾
VS*	lb.	**.41¾**	**.42¾**
Plastogen*	lb.	.08¾	.09
Plastolein 9050* (c.l.)	lb.	.54½	.56½
9055*	lb.	.30½	.32½
9058*	lb.	.48	.50
9250*	lb.	.38¼	.40¼
9715*	lb.	.39	.40
Plastone	lb.	.23	.27
Polycizer 162*	lb.	.28	.31½
332*	lb.	.40	.42½
562*	lb.	.28½	.32
662*	lb.	.29	.32½
532 and 632*	lb.	.40	.42½
ED*	lb.	—	.51
Polyco 438*	lb.	**.34**	**.35**
Polymel C-130*	lb.	.13¾	.14½
D*	lb.	.22½	.23½
6*	lb.	**.05¼**	**.07¾**
Poly-Sperse AP-2	lb.	.23	.29½
AP-300, LC-20	lb.	.26	.32½
Process Oil C-255* (c.l.)	gal.	.27½	.29½
Propylene Stearate (dms.)	lb.	—	**.32**
PRR 1*	gal.	**.15**	**.35**
PT 67 Light Pine Oil* (dms.)	gal.	—	**.60**
101 Pine Tar Oil* (t.c., dms.)	gal.	.0460	.0634
400 Pine Tar* (600* & 800*) (t.c., dms.)	lb.	.0460	.0634
PX-104*	lb.	.30	.32½
PX-108*	lb.	.30½	.33
PX-138*	lb.	**.32½**	**.33½**
PX-208*	lb.	**.44½**	**.45½**
PX-238*	lb.	**.44½**	**.45½**
PX-404*	lb.	.66	.67
PX-438*	lb.	.60	.61
PX-800*	lb.	.34	.35
PX-917*	lb.	.36½	.37½
Reogen*	lb.	.14½	.14½
465 Resin* (dms.)	lb.	.07½	.08
Resin C*	lb.	**.0225**	**.0310**
Resinex*	lb.	.03¼	.04¾
L-4*	lb.	.02¾	.03¼
Rexflex*	lb.	—	**.15**
Rosin Oil	gal.	.80	1.35
RR-16 (Neoprene)*	lb.	—	.37
R.S.O. Softening Oil*	lb.	.03	.05
RuBars*	lb.	.19¼	.20
Rubberol*	lb.	.18	.25¼
Santicizer B-16*	lb.	**.48¼**	**.49¼**
E-15*	lb.	.52¾	.53¼
M-17*	lb.	.44¾	.45¾
No. 140*	lb.	.32½	.36
No. 141*	lb.	**.36**	**.37**
No. 160*	lb.	.28½	.29½
No. 602*	lb.	—	.30½
No. 603*	lb.	—	.27
Sherolatum*	lb.	**.03½**	**.06**
Staflex DBES*	lb.	.58	.60½
DOS*	lb.	.58	.60½
IXA*	lb.	.32	.35
KA*	lb.	.36	.38¾
Stan Chlor Oils*	lb.	.13½	.20½
70*	lb.	.17½	.30
Stanolind Petrolatum*	lb.	.07	.156
Wax*	lb.	**.31**	**.33**
Sunny South Burgundy Pitch*	lb.	.1030	.1085
Rosin Oil*	gal.	**.58**	**.87½**

PLASTICIZERS & SOFTENERS (Cont'd)

Superla Wax*	lb.	.30	**.397**
Syncera Wax*	lb.	.16	.267
Syn Tac* (c.l.)	gal.	—	**.33**
Synthetic Revertant Oil*	lb.	—	**.16**
Tar, Refined	gal.	.1200	.1760
Tarpine	lb.	.035	.050
Terpene A*	gal.	—	**.65**
TP-90B*	lb.	.59	.69
TP-95*	lb.	.65	.73
Transphalt Resins*	lb.	.03¾	.05¼
Tributyl Phosphate	lb.	.52½	.53½
Tricresyl Phosphate	lb.	.32½	.36
Turgum S*	lb.	.10¾	.11¾
Vanadiset B*	lb.	.036	.07
C*	lb.	.031	.06
MR 80 Mesh*	lb.	.08½	.12½
Vistac No. 1*	gal.	1.00	1.21
P*	lb.	.18	**.18½**
Vopcolene 50*	lb.	—	.31
Witcizer 100*	lb.	.20¼	.21¼
200*	lb.	.20¼	.21¼
201*	lb.	.22¾	.25¼
300*	lb.	.30	.33½
312*	lb.	.30½	.34
313*	lb.	.30½	.34
412*	lb.	.42½	.46
Witresin*	ton	—	52.50

PROCESSING AIDS

Castor Oil, Blown (dms.)	lb.	—	**.21**
Refined (dms.)	lb.	—	**.18½**
Castorwax*	lb.	—	**.24½**
Dutrex 7*	lb.	.12	.20
ELA*	lb.	—	**.82**
Hydrofol Glycerides 200*	lb.	.15½	.19¾
Kenflex N*	lb.	—	**.18**
Maleic Anhydride	lb.	—	.27
Millrex*	lb.	—	**.15**
Nadic Anhydride	lb.	—	.75
Polycin*	lb.	—	.24½
Resin No. 510*	lb.	.19	.26
No. 529*	lb.	.25	.32
Pulverized*	lb.	**.20½**	**.25**
Thiomalic Acid	lb.	—	3.50
Zyrox*	lb.	.78	.88

PROTECTIVE & STABILIZING AGENTS

Acacia*	lb.	.12¾	**.21**
Alcogum*	lb.	.08½	.24
Alpha Protein	lb.	—	**.23**
Aroostoocrat*	lb.	—	.07½
Carob Bean Flour	lb.	—	.50
Casein	lb.	.32	.38
Emcol K-8300* (dms.)	lb.	.14	.18
Ethylene Diamine 68%	lb.	**.44**	**.47**
Gum Arabic	lb.	—	.23
Karaya Gum	lb.	—	.35
Locust Bean Gum	lb.	—	.50
Prosein*	lb.	—	**.06**
Stablex B*	lb.	**.50**	**.95**
K*	lb.	.27	.35

RECLAIMING AGENTS

Amalgamator Z-4*	lb.	.32	.33
Armeen C*	lb.	.46	.52
Mixed Crude*	lb.	.19	.25
T*	lb.	.32	.38
Burco RA*	lb.	.05	.081
C-6 Oil* (28* & 32*)	gal.	**.33**	**.38**
C-10 Oil*	gal.	**.25**	**.30**
C-33* (t.c.)	gal.	—	**.21½**
C-42* (t.c.)	gal.	—	**.23**
Caustic Soda—Flake 76% (c.l., dms.)	cwt.	—	4.50
Liquid 50% (t.c.)	cwt.	—	2.80
Solid 76% (c.l., dms.)	cwt.	—	4.10
Cresylic Acid (99-100%)	gal.	.85	1.39
D-4* (t.c.)	gal.	—	**.27**
E-5* (t.c.)	gal.	—	**.25**
Flake Calcium Chloride (77-80%)	ton	—	29.00
G.B. Reclaiming Oil*	gal.	.19½	.21½
CD-10*	gal.	.17½	.19½
CD-50-U*	gal.	.25½	.27½
Gensol No. 6* (t.c.)	gal.	—	**.40**
Heavy Aromatic Naphtha	gal.	.13¼	.18½
LX-77 Reclaiming Solvent*	gal.	.21	**.33**
LX-572 Reclaiming Oil*	gal.	.27	**.32**
LX-777 Reclaiming Oil*	gal.	.23	**.33**
Neo-Fat D-242*	lb.	**.05½**	**.07¾**
42-70*	lb.	.08¼	.10¼
No. 517 H.B. Oil*	gal.	.11½	.16½
535*	gal.	.22	**.27**
Pitt-Consol "500" (dms.)	lb.	.30	.30½
PT 67 Light Pine Oil* (dms.)	gal.	—	**.60**
PT 101 Pine Tar Oil* (t.c., dms.)	gal.	.0460	.0634
PT 150 Pine Solvents* (dms.)	gal.	—	**.44**
Q Oil* (t.c.)	gal.	—	**.286**
Reclaiming Oil 3186-G*	gal.	.26	.33
Reclaiming Reagent No. 1431*	lb.	.21	.25
R.P.A. No. 3*	lb.	—	.47
RR-10*	lb.	—	.37
Soda Ash (c.l., bags)	cwt.	—	1.75
Solvent 534*	gal.	.20½	**.26½**
Solvent Oil 21*	gal.	**.24**	**.29**
C-42*	gal.	.23	.38
X-1 Resinous Oil*	lb.	.0225	.0325

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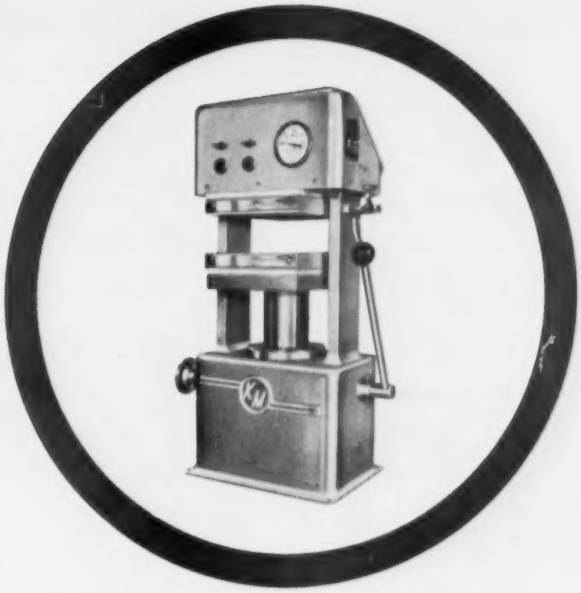

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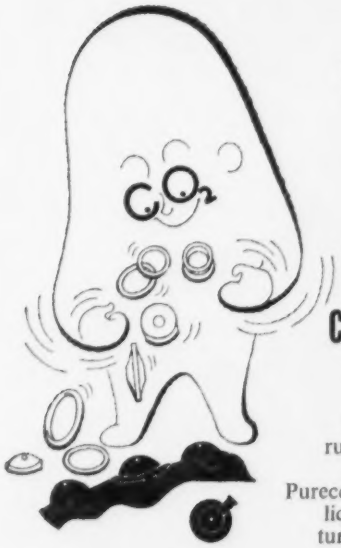

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38 YEARS EXPERIENCE

REINFORCING AGENTS—CARBON BLACK

Channel, Hard Processing (HPC) (bags)

Atlantic HPC-98*	lb.	.0775 -	.1450
Continental F*	lb.	.0775 -	.1450
Croflex*	lb.	.0775 -	.1450
Dixiedensed (and S)*	lb.	.0775 -	.1450
Kosmobile (and S)*	lb.	.0775 -	.1450
Micronex HPC*	lb.	.0775 -	.1450
Witco No. 6*	lb.	.0775 -	.1450

Channel, Medium Processing (MPC) (bags)

Arrow MPC*	lb.	.0775 -	.1350
Atlantic MPC-95*	lb.	.0775 -	.1450
Continental A*	lb.	.0775 -	.1450
Croflex TH*	lb.	.0775 -	.1450
Dixiedensed HR (and S-66)	lb.	.0775 -	.1450
Kosmobile HM (and S-66)	lb.	.0775 -	.1450
Micronex Standard*	lb.	.0775 -	.1450
Spheron 6*	lb.	.0775 -	.1450
Texas M*	lb.	.0775 -	.1450
Witco No. 1*	lb.	.0775 -	.1450

Channel, Easy Processing (EPC) (bags)

Atlantic EPC E-42*	lb.	.0775 -	.1450
Collocarb*	lb.	.0590 -	.1400
Continental AA*	lb.	.0775 -	.1450
Croflex 77*	lb.	.0775 -	.1450
Dixiedensed 77*	lb.	.0775 -	.1450
Kosmobile 77*	lb.	.0775 -	.1450
Micronex W-6*	lb.	.0775 -	.1450
Spheron 9*	lb.	.0775 -	.1450
Texas E*	lb.	.0775 -	.1450
Witco No. 12*	lb.	.0775 -	.1450
Wyex EPC*	lb.	.0775 -	.1350

Channel, Conductive (CC) (bags)

Continental R-40*	lb.	.2600 -	.3400
Dixie 5 Dustless*	lb.	.1350 -	.2100
Dixie Voltex*	lb.	.2600 -	.3400
Kosmink Dustless*	lb.	.1350 -	.2100
Kosmos Voltex*	lb.	.2600 -	.3400
Spheron C*	lb.	.1800 -	.2400
Voltex*	lb.	.2600 -	.3400

Channel, Surface Treated (STC) (bags)

Texas 109*	lb.	.0840 -	.1475

Conductive Furnace Black (CF) (bags)

Aromex CF*	lb.	.0875 -	.1450
Atlantic CF*	lb.	.0875 -	.1450
Continex CF*	lb.	.1050 -	.1550
Croflex CF*	lb.	.0875 -	.1450
Dixie CF*	lb.	.0875 -	.1450
Kosmos CF*	lb.	.0875 -	.1450
Shawinigan Acetylene Black*	lb.	—— -	.1900
Vulcan C*	lb.	.1100 -	.1750

Extra-Conductive Furnace Black (ECF) (bags)

Vulcan XC-72	lb.	.1775 -	.2700

Furnace, Fast Extruding (FEF) (bags)

Arovel FEF*	lb.	.0675 -	.1250
Continex FEF*	lb.	.0675 -	.1250
Croflex 50*	lb.	.0675 -	.1250
Dixie 50*	lb.	.0675 -	.1250
Kosmos 50*	lb.	.0675 -	.1250
Philblack A*	lb.	.0675 -	.1200
Statex M*	lb.	.0675 -	.1250
Sterling SO*	lb.	.0675 -	.1250

Furnace, Fine (FF) (bags)

Statex B*	lb.	.0725 -	.1300
Sterling 99*	lb.	.0725 -	.1300

Furnace, General Purpose (GPF) (bags)

Arogen GPF*	lb.	.0600 -	.1175
Dixie 35*	lb.	.0600 -	.1175
Kosmos 35*	lb.	.0600 -	.1175
Sterling V*	lb.	.0600 -	.1175
V (Non-Staining)	lb.	.0600 -	.1175

Furnace, High Abrasion (HAF) (bags)

Aromex HAF*	lb.	.0725 -	.1350
Continex HAF*	lb.	.0725 -	.1350
Croflex 60*	lb.	.0725 -	.1350
Dixie 60*	lb.	.0775 -	.1350
Kosmos 60*	lb.	.0775 -	.1350
Philblack O*	lb.	.0775 -	.1300
Statex R*	lb.	.0775 -	.1350
Vulcan 3*	lb.	.0775 -	.1350

Furnace, High Modulus (HMF) (bags)

Continex HMF*	lb.	.0675 -	.1200
Croflex 40*	lb.	.0675 -	.1250
Dixie 40*	lb.	.0675 -	.1250
Kosmos 40*	lb.	.0675 -	.1250
Modulex HMF*	lb.	.0675 -	.1200
Statex 93*	lb.	.0675 -	.1200
930*	lb.	.0675 -	.1200
Sterling L*	lb.	.0675 -	.1200
LL*	lb.	.0675 -	.1200

REINFORCING AGENTS—CARBON BLACK (Cont'd)

Furnace, Semi-Reinforcing (SRF) (bags)

Continex SRF*	lb.	.0575 -	.1150
Croflex 20*	lb.	.0575 -	.1150
Dixie 20*	lb.	.0575 -	.1150
Essex SRF*	lb.	.0575 -	.1150
Furnex*	lb.	.0575 -	.1150
Gastex*	lb.	.0525 -	.1200
Kosmos 20*	lb.	.0575 -	.1150
Pelletex*	lb.	.0525 -	.1100
NS*	lb.	.0525 -	.1100
Shawinigan Acetylene Black*	lb.	—— -	.1900
Sterling NS*	lb.	.0575 -	.1150
R*	lb.	.0625 -	.1250
S*	lb.	.0575 -	.1150

Furnace Super Abrasion (SAF) (bags)

Dixie 85	lb.	.1150 -	.1650
Kosmos 85	lb.	.1150 -	.1650
Philblack E*	lb.	.1150 -	.1550
Vulcan 9*	lb.	.1150 -	.1800

Furnace, Super Abrasion, Intermediate (ISAF) (bags)

Aromex ISAF*	lb.	.0925 -	.1500
Continex ISAF*	lb.	.0925 -	.1500
Dixie 70*	lb.	.0925 -	.1500
Kosmos 70*	lb.	.0925 -	.1500
Philblack I*	lb.	.0925 -	.1450
Statex 125*	lb.	.0925 -	.1500
Vulcan 6*	lb.	.0925 -	.1500

Furnace, Super Conductive (SCF) (bags)

Vulcan SC*	lb.	.1800 -	.2400

Thermal, Fine (FT) (bags)

P-33 (c.l.)*	lb.	—— -	.0575
Sterling FT (c.l.)*	lb.	—— -	.0575

Thermal, Medium (MT) (bags)

Shellblack*(†)	lb.	—— -	.0250
Sterling MT (c.l.)*	lb.	—— -	.0400
MT Non-Staining (c.l.)*	lb.	—— -	.0500
Thermax (c.l.)*	lb.	—— -	.0400
Stainless (c.l.)	lb.	—— -	.0500

REINFORCING AGENTS—SILICA

Cab-O-Sil (compressed)*	lb.	.68 -	.75
Cab-O-Sil (uncompressed)*	lb.	.68 -	.75
D. C. Silica (pelletized)*	lb.	1.45 -	1.65
Hi-Sil 101*	lb.	.14 -	.15½
233*	lb.	.09 -	.10½
X303*	lb.	.40 -	.45
Santocel*	lb.	.62 -	.64
Valron Estersil*	lb.	2.00 -	2.25

REINFORCING AGENTS—MISCELLANEOUS

Angelo Shellac*	lb.	.50 -	.60
Darex Copolymer No. 3*	lb.	.47 -	.49
43G*	lb.	.39 -	.41
Darex Copolymer Latex No. 3-L	lb.	.41½ -	.46
Durez 12687 (and 12707)*	lb.	—— -	.38½
Durez 13355*	lb.	—— -	.30
Good-rite Resin 50*	lb.	.39 -	.41
Hystron*	lb.	.39 -	.41
Kralac A-EI*	lb.	.39 -	.41
Lampblack	lb.	—— -	.12
Marbon S and S-1*	lb.	.39 -	.41
8000*	lb.	.39 -	.41
Marmix*	lb.	.39 -	.41
Pliolite Latex 150*	lb.	.35 -	.39
Pliolite Resin-Rubber Masterbatches*	lb.	.33 -	.57
Pliolite NR*	lb.	.93 -	.95
S6B*	lb.	.39 -	.41
Plio-Tuf G85C*	lb.	.52 -	.54
Polyco 220*	lb.	.18¼ -	.19¼
Polypol S-70*	lb.	.22 -	.23

RETARDERS

Benzoic Acid TBAO-2*	lb.	—— -	.44
Dutch Boy Normasal*	lb.	—— -	.46
ESEN*	lb.	.35 -	.37
Good-rite Vultrol*	lb.	.62 -	.64
Harcopol 1183*	lb.	.70 -	.74
Retarder J*	lb.	.62 -	.64
PD*	lb.	.37 -	.39
W*	lb.	—— -	.42
Retardex*	lb.	.49 -	.49
Wiltrol P	lb.	.37 -	.39

RUBBER SUBSTITUTES

Mineral Rubber

Byerlyte*	ton	50.00 -	57.00
Hard Hydrocarbon (dms.)*	ton	53.00 -	55.00
Herron Flake*	ton	—— -	45.00
Mineral Rubber, Solid	ton	42.50 -	44.50
M. R. No. 38*	ton	55.00 -	65.00
Witresin	ton	—— -	52.50

Vulcanized Vegetable Oils

Amberex*	lb.	.29 -	.36
Brown	lb.	.15 -	.24
Car-Bel-Lite*	lb.	.3000 -	.3300
Neophax*	lb.	.17 -	.27
Polyrez A and C*	lb.	.12 -	.17
White	lb.	.15 -	.26

Miscellaneous Rubber Substitutes

G.B. Asphaltenes*	lb.	.06 -	.06½
Gilsowax B*	lb.	.09 -	.11
Resin No. 1098 (dms.)	lb.	—— -	.62
No. 1198*	lb.	.46¾ -	.49¾
Tysonite*	lb.	.26 -	.26¾

SOLVENTS

Acetone (dlvd.)	lb.	.11 -	.12
Amsco Lactol Spirits* (t.c.)	gal.	—— -	.19
Naphthol Spirits*	gal.	—— -	.18
Mineral Spirits*	gal.	—— -	.17
Rubber Solvent* (t.c.)	gal.	—— -	.18
Solv A* (t.c.)	gal.	—— -	.24½
Solv A-80* (t.c.)	gal.	—— -	.30
Solv B* (t.c.)	gal.	—— -	.28½
Solv B-90* (t.c.)	gal.	—— -	.32
Solv D* (t.c.)	gal.	—— -	.30
Solv E*	gal.	—— -	.30
Solv F*	gal.	—— -	.30
Solv F-80*	gal.	—— -	.32½
Solv G*	gal.	—— -	.42½
Special Naphtholite* (t.c.)	gal.	—— -	.18
Special Textile Spirits*	gal.	—— -	.19
Super Hi-Flash Naphtha*	gal.	—— -	.35
Super Naphtholite*	gal.	—— -	.18
Textile Spirits* (t.c.)	gal.	—— -	.19
Amyl Chlorides, Mixed (t.c.l.) (dms.)	lb.	—— -	.11
Benzol 90%	gal.	.36 -	.40
Butyl Acetate (t.c.)	lb.	—— -	.13½
Butyl Alcohol (t.c.)	lb.	—— -	.13½
Secondary (dlvd.)	lb.	.15 -	.16
Tertiary (dlvd.)	lb.	.15 -	.16
Carbon Bisulfide, Tech.	lb.	.05½ -	.07½
Carbon Tetrachloride	lb.	.10 -	.13½
Cosol 1*	gal.	.37 -	.43
2*	gal.	.42 -	.48
Cyclohexane	gal.	.55 -	.72
85% (c.l.) (dms.)	gal.	—— -	.56
Cyclohexanone	lb.	.29 -	.31½
Diacetone, Pure (dlvd.)	lb.	.15½ -	.16½
Dichlorethyl Ether (dms.)	lb.	.14½ -	.15
Formal (dms.)	lb.	.30¾ -	.31¼
Dichloropentanes (t.c.l.) (dms.)	lb.	—— -	.06
Dicon*	gal.	—— -	.50
Halowax Oil*	lb.	.28 -	.41
Heptanes* (t.c.)	gal.	.19 -	.22
Hexanes (t.c.)	gal.	.19 -	.22
Isopropyl Alcohol, Ref. 99% (dlvd.)	gal.	.57 -	.64
Ether, Ref. (dlvd.)	lb.	.09½ -	.10½
Mersol*	gal.	.43 -	.79
Mesityl Oxide (dlvd.)	lb.	.15 -	.16
Methyl Acetone, Syn. (dms., dlvd.)	gal.	.57 -	.63
Methyl Chloride	lb.	—— -	.11½
Methyl Ethyl Ketone	lb.	.15 -	.16
Methyl Isobutyl Ketone (dlvd.)	lb.	.17 -	.18
Methylene Chloride	lb.	.11¾ -	.16
N-5 Pentane Mix* (t.c.)	gal.	—— -	.13½
N-6 Hexanes* (t.c.)	gal.	—— -	.14½
N-7 Hexanes* (t.c.)	gal.	—— -	.13½
Penetrell*	gal.	.45 -	.73
Perchlorethylene	lb.	.11½ -	.14½
Petrolene* (t.c.)	gal.	—— -	.14125
Picolines, Alpha, Refined	lb.	.43½ -	.44
Mixed	lb.	.32½ -	.33
Proprietary Solvent (dms.)	gal.	.66 -	.77
Propyl Acetate (t.c., dlvd.)	lb.	—— -	.11¾
Alcohol (t.c., dlvd.)	lb.	—— -	.11
PT 150 Pine Solvent* (dms.)	gal.	—— -	.44
Pyridine, Refined	lb.	.74½ -	.75
Quinoline	lb.	.50 -	.54¼
Rubber Solvent (t.c.)	gal.	—— -	.16
Rubsol (t.c.)	gal.	—— -	.12875
Skellysolve B (Hexanes)* (t.c.)	gal.	—— -	.158
C (Heptanes)* (t.c.)	gal.	—— -	.151
R (Rubber Solvent)*	gal.	—— -	1.29
Solvent, Crude, Light	gal.	.19 -	.28
Solvesso 100* (t.c.)	gal.	.33 -	.35
150 (t.c.)	gal.	.33 -	——
Sunny South DD Dipentine*	gal.	.45 -	.73
Sunny South DD Pine Oil*	lb.	.15½ -	.1780

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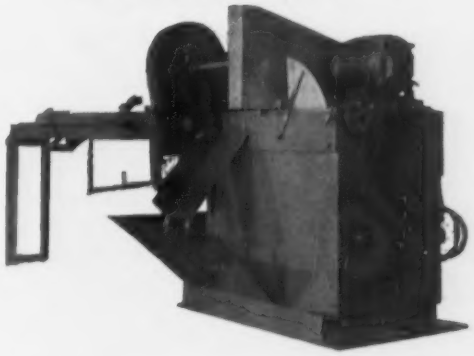

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Cuts per minute 25 to 175.
Automatic Feed and Circulating Pump.
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Sunray*	gal.	.1140	.1600
Toluene (dms.)	gal.	—	.38
Toluol (t.c.)	gal.	.33	.35
Trichlorethane	lb.	.13	.13½
Triglycol Dichloride	lb.	.63	.64
Union Thinner 1* (t.c.)	gal.	—	.174
5* (dms.)	gal.	—	.199
7* (t.c.)	gal.	—	.164
2-50 W Hi-Flash*	gal.	—	.41
Xylol	gal.	.34	.38

STABILIZING AGENTS (for Vinyl Resins)

Advastab BC-12*	lb.	.90	.95
BC-74*	lb.	.70	.75
BC-105*	lb.	.75	.80
CH-101*	lb.	.60	.65
CH-201*	lb.	.60	.65
E-82*	lb.	.90	.95
JCX*	lb.	.62	.67
L Paste*	lb.	.65	.70
SN*	lb.	.47	.52
T-10*	lb.	1.90	1.95
T-50-LT*	lb.	3.20	3.25
XBZ-155*	lb.	.69	.74
XC-143*	lb.	.90	.95
XE-98*	lb.	.53	.58
Barca 10*	lb.	.75	.80
Barium Ricinoleate (BVS)	lb.	—	.70
Barium Stearate	lb.	.39	.44
Basic Silicate White Lead	lb.	.20¾	.21¾
Cadmium Ricinoleate	lb.	—	2.00
Calcium Ricinoleate	lb.	—	.55
Dutch Boy DS-207*	lb.	—	.54
Plumb-O-Sil A*	lb.	—	.29¾
B*	lb.	—	.31¾
Tribase*	lb.	—	.26½
Dythal*	lb.	—	.39½
Ferro 182* (dms.)	lb.	.70	.76
200* (dms.)	lb.	1.33	1.43
203* (dms.)	lb.	.85	.95
541* (dms.)	lb.	.35½	.45½
541A* (dms.)	lb.	.81¾	.91¾
700* (dms.)	lb.	.48¾	.58¾
900* (dms.)	lb.	.90	1.00
903* (dms.)	lb.	.55	.65
909* (dms.)	lb.	.91	1.01
920*	lb.	—	.98
931* (dms.)	lb.	.75¾	.85¾
993* (dms.)	lb.	.89	.99
1203* (dms.)	lb.	1.30	1.40
1206* (dms.)	lb.	1.23	1.33
1820* (dms.)	lb.	.90	1.00
1825* (dms.)	lb.	1.00	1.10
Permyl A	lb.	.45	.55
Harshaw 1-V-3*	lb.	.43	.45
1-V-4*	lb.	.66½	.70
1-V-7*	lb.	.66	.68
2-V-4*	lb.	.85	.87
2-V-7*	lb.	—	1.10
2-V-8*	lb.	—	1.30
5-V-1*	lb.	.41	.43
7-V-1*	lb.	—	.90
8-V-1*	lb.	.88	.90
8-V-5*	lb.	—	.80
8-V-100*	lb.	.82	.84
9-V-1*	lb.	.70	.72
12-V-5*	lb.	.73	.75
24-V-1*	lb.	1.10	1.12
28-V-2*	lb.	—	1.18
128-V-5*	lb.	.86	.88
Lithium Stearate	lb.	.52	.57
Fluffy	lb.	.47½	.70
Standard	lb.	.52½	.75
Mark C*	lb.	.88	.90
E*	lb.	.72	.75
M*	lb.	.68	.70
PH*	lb.	.63	.65
T1*	lb.	.72	.75
WS*	lb.	.98	1.00
X*	lb.	2.50	2.75
XI*	lb.	.87	.90
XV*	lb.	.88	.90
XX*	lb.	.58	.60
Metasap 613-A*	lb.	—	.69
613-B*	lb.	—	.84
613-C*	lb.	—	1.06
621*	lb.	—	.88
624*	lb.	—	.75
633*	lb.	—	.75
635*	lb.	—	.45
Modicol N*	lb.	.41½	.42½
S*	lb.	.30⅜	.31⅜
Sodium Silicates 41°/1:32	cwt.	1.00	2.10
Stabelan E*	lb.	1.35	1.50
XL*	lb.	.55	.65
HR-50*	lb.	.75	.90
HR Liquid*	lb.	.65	.75
HR Paste*	lb.	.85	.95
HR Powder*	lb.	.95	1.05
No. 110 Liquid	lb.	.65	.75
No. 115 Liquid	lb.	.85	.95
No. 120 Liquid	lb.	.65	.75
Stabilizer No. 52*	lb.	1.90	2.00
89X*	lb.	.75	.80
B-5*	lb.	—	.70
E6B*	lb.	—	.95
G-1*	lb.	1.25	1.40
HR*	lb.	.85	.89
L*	lb.	—	.60
OM-10*	lb.	—	1.95
Staflex OY*	lb.	1.00	1.20
QXMA*	lb.	—	.70

STABILIZING AGENTS (Cont'd)

Stayrite 10*	lb.	.34	.36
F-10*	lb.	.41	.43
15*	lb.	.53	.56
20*	lb.	.37	.42
22*	lb.	1.00	1.13
25*	lb.	.35	.40
70*	lb.	.68	.70
71*	lb.	.88	.90
75*	lb.	.59	.62
76*	lb.	.53	.55
80*	lb.	.68	.70
90*	lb.	.68	.70
95*	lb.	.68	.70
229*	lb.	.45	.50
Vanstay C-73*	lb.	.63	.65
HT*	lb.	.90	.92
L*	lb.	.33	.35
N*	lb.	.98	1.00
R*	lb.	.70	.72
S*	lb.	.63	.65
Z*	lb.	.67	.69

STIFFENING AGENTS

Polyac*	lb.	—	1.80
Processing Stiffener 710*	lb.	—	.88
Solvitose HDF, H, C-S, T, and E*	lb.	.22	.25
Versatil Gum 8-E*	lb.	.15	.19

SUN CHECKING AGENTS

Allied AA-1144*	lb.	.23	.24
AA-1177*	lb.	.15½	.16½
Antisol*	lb.	—	.23
Antisun* (Chipped)	lb.	.15½	.17½
(Slabbed)	lb.	.15	.17
Heliozone*	lb.	.31	.32
Microflake*	lb.	.20	.24
Nacconol NRSF*	lb.	.40½	.45
NBC*	lb.	—	1.55
Ross Sunproofing Waxes*	lb.	—	.14½
Sunolite*	lb.	.16	.22
127*	lb.	.16½	.20½
154*	lb.	.23	.25
Sunproof*	lb.	.31	.32
713*	lb.	.25	.26
Improved*	lb.	.25	.26
Super*	lb.	.40	.41
Jr.*	lb.	.20	.21
Tonox*	lb.	.52	.54

SURFACE ACTIVE AGENTS

Anhydrapent*	lb.	.56	.59
Anhydrol 6990*	lb.	.51	.56
6991*	lb.	.51	.56
Aquarex D*	lb.	—	.78
G*	lb.	—	.21
MDL*	lb.	—	.33
ME*	lb.	—	.80
NS*	lb.	—	.60
SMO*	lb.	—	.50
WAQ*	lb.	—	.22
Emulphor EL-620*	lb.	—	.40
EL-719*	lb.	—	.58
ON-870*	lb.	—	.55
Igepal CA-630	lb.	—	.29
CO-630	lb.	—	.29
CO-730	lb.	—	.29
CO-850*	lb.	—	.29
CO-880*	lb.	—	.29
Igepon CN-42*	lb.	—	.25
T-33*	lb.	—	.21
T-51*	lb.	—	.13½
T-77*	lb.	—	.49
Kessco 50201*	lb.	—	.43½
50203*	lb.	—	.46
18201*	lb.	—	.36½
18203*	lb.	—	.36
Pluronic L62*	lb.	.33½	.39
L64*	lb.	.33½	.39
Sellogen Gel*	lb	—	.12¾
Soybean Lecithin	lb.	.13	.17

TACKIFIERS

Amalgamator Z-4*	lb.	.32	.33
Arceo 620-32B*	lb.	.20½	.21½
716-30*	lb.	.18½	.19½
1041-21*	lb.	.16½	.17½
A-26*	lb.	.18	.19
Bunaweld Polymer No. 780*	lb.	—	.24
No. 5514*	lb.	—	.35
Gales* (dms.)	lb.	.17¾	.18¾
Indopol H-300*	gal.	1.00	1.22
Koresin*	lb.	—	.95
Liquid Rubber Flux*	lb.	—	.14
Nacconal NRSF* (dlvd.)	lb.	.40½	.45
Nilox Resin* (c.l.)	cwt.	—	14.50
Resin V	lb.	—	.23½
Synthol*	lb.	.17	.24¾
Vistac A*	lb.	.21½	.22¾
Vistanex LM Grades*	lb.	—	.45
Zirex* (c.l.)	cwt.	—	14.75

THICKENERS (For Latex)

Alcogum AN-6*	lb.	—	.05
AN-10*	lb.	—	.08½
PA-10*	lb.	—	.12
Betanol* (dms.)	lb.	.70	.95
Gomme Labolene*	lb.	.45	.47
Good-rite K-702*	lb.	.34½	.35
K-704*	lb.	.21	.22
K-705*	lb.	.31	.32
K-707*	lb.	18	.19
K-708*	lb.	.29	.30
K-710*	lb.	.15	.16

THICKENERS (For Latex) (Cont'd)

Modicol VD*	lb.	.13⅜	.14⅜
VE*	lb.	.13⅜	.14⅜
Polyco 296 BT*	lb.	.15	.16
296-N*	lb.	.15	.16
530*	lb.	.15	.16
Propylene Laurate (dms.)	lb.	.57	.82
Sodium Silicate, 41°/1:3.2	cwt.	1.10	2.20
Solvitose Series*	lb.	.22	.25

VULCANIZING AGENTS

Selenium

Vandex*	lb.	—	15.50

Sulfur

Aero Brand* (c.l.)	cwt.	—	2.65
Blackbird* (c.l.)	cwt.	—	2.85
Cloud* (c.l.)	cwt.	—	2.80
Crystex*	lb.	.19½	.23
Darex Dispersed Sulfur*	lb.	.14	.16
Devil A* (c.l.)	cwt.	—	2.40
Dispersed Sulfur	lb.	.14	.16
Insoluble Sulfur 60*	lb.	.12½	.13
Ko-Blend 1S*	lb.	—	.39
Mist* (Wettable) (c.l.)	cwt.	—	4.00
Spider* (c.l.)	cwt.	—	2.80
Star* (c.l.)	cwt.	—	3.25
Sulfasan R*	lb.	—	1.50
Tire* (c.l.)	cwt.	—	2.40
Tube* (c.l.)	cwt.	—	3.25
Vultac 2*	lb.	.47	.49
3*	lb.	.51	.53

Tellurium

Telloy*	lb.	—	2.50

WETTING AGENTS

Advawet No. 10*	lb.	—	.17
No. 33*	lb.	—	.48
Aerosol 18*	lb.	—	.40
AY*	lb.	1.00	1.20
MA 80%*	lb.	.67	.72
OS*	lb.	.39	.45
OT 75% Aqueous*	lb.	.63	.68
OT 100%*	lb.	1.00	1.20
OT-B*	lb.	.85	1.05
Alrosal* (dms.)	lb.	—	.40
Alrosperse*	lb.	—	.18
Anhydrol 6990* and 6991*	lb.	.51	.56
Areskap 50*	lb.	.30	.32
Dry 100*	lb.	.60	.64
Aresket Dry 300*	lb.	.60	.64
Aresklene 375*	lb.	.42	.47
Armacs*	lb.	.28	.77
Arquads*	lb.	.42	.61
Emcol 5100* (dms.)	lb.	—	.31
Energetic W-100	lb.	.28½	.35
Etho-Chemicals*	lb.	.26	.58
Ethomeen S/15*	lb.	.48	.50
T/15*	lb.	.46	.48
Kesco E-122* (dms.)	lb.	—	.45
18201*	lb.	—	.38½
Kreelon 4D* (dms.)	lb.	.13	.16
8G* (dms.)	lb.	.26	.28
Kyro EO* (dms.)	lb.	—	.29¾
Modicol N*	lb.	.41½	.42½
S*	lb.	.30⅜	.31⅜
Nacconol SL* (dlvd.)	lb.	.084	.10
60S* (dlvd.)	lb.	.19	.225
Nacconol A* (dlvd.)	lb.	—	.52
Nekal WS-25	lb.	—	.38
WS-99	lb.	—	.95
Orvus AB Granules*	lb.	.15¾	.16¾
Parnol*	lb.	.13	.18
Regal Beads	lb.	.12¾	.16¾
H. D. Beads	lb.	.12¾	.15¾
Santomerse No. 3	lb.	.41	.45
S*	lb.	1.55	1.85
Selapon Gel*	lb.	—	.13
Sorapon SF-73*	lb.	—	.18
SF-78*	lb.	—	.30
Sorbit P*	lb.	—	.28
Soybean Lecithin	lb.	.13	.17
Stablex G*	lb.	.50	.90
Tergitol 4* (dms., dlvd.)	lb.	.32	.33
7* (dms., dlvd.)	lb.	.43	.44
08* (dms., dlvd.)	lb.	.31	.32
P28* (dms., dlvd.)	lb.	.18½	.19
Trenamine W-30	lb.	—	.15
Vultamol*	lb.	—	.17½
Wetsit Conc.*	lb.	.25	.28

MISCELLANEOUS CHEMICALS

Aquesperse 30*	lb.	—	.11
Arecopel W-18*	lb.	.17	.19
Asbury Graphite*	lb.	.05	1.45
Copper Inhibitor X-872-L*	lb.	—	2.01
D-Tac*	lb.	—	.22
2-Ethyl Hexanol	lb.	.23¾	.24¾
Fura-Tone Resin 1226*	lb.	.41	.43
MODX*	lb.	.32½	.34½
Nacconates* (dms.)	lb.	.99	3.53
Para Resins*	lb.	.04	.04½
Pigmented Filmite* (dlvd.)	lb.	.16¾	—
Resorcin, Tech.	lb.	.77½	.81½
Rio Resin*	lb.	.65	.67
Rongalite CX*	lb.	—	.21½
Sherosopes*	lb.	.13½	.18¾
Sublac Resin PX-5*	lb.	.23½	.24½
Synpep*	lb.	.54	.60
Thiokol LP-2*	lb.	—	.96
LP-3, LP-32, LP-33*	lb.	—	.96
LP-8*	lb.	1.25	1.35
Tysonite*	lb.	.26	.26¾
VA-7*	lb.	—	.50
Vanfre*	gal.	2.50	3.00

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Copy for September, 1957, issue must be received by Monday, August 26th

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YOUNG MAN with O-Ring experience seeks sales territory with O-Ring or molded mechanical rubber goods manufacturer. Address Box 886-P, RUBBER AGE.

MANAGER-CHEMICAL ENGINEER, over 25 years experience, production, development, tires, tubes, molded and extruded mechanicals. Desires managerial position with aggressive, growth-minded organization. Address Box 891-P, RUBBER AGE.

PLANT MANAGER—Precision rubber processing. Experienced in production, development, management, cost analysis and customer contacts. Graduate chemical engineer. Age 31. Address Box 894-P, RUBBER AGE.

PRODUCTION MANAGER desires new connections. Experienced in large and smaller plant. Research-development engineer-chemist-superintendent. Mechanicals-chemical sponge. University education. Wants mid-west or far West location. Address Box 895-P, RUBBER AGE.

PRODUCTION MANAGER with 15 years experience and wide knowledge in all phases of molded and extruded products, seeks new opportunity. Experience covers general management, production planning, research and development, cost estimating and analysis. Can take complete charge of plant operation. Presently employed. Address Box 899-P, RUBBER AGE.

HELP WANTED

"Go South, Young Man!"
Real Opportunities

1. Rubber and Plastics Chemists and Chemical Engineers, Research and Development.
2. Calender Room Supervisor and Compounder.

New opportunities for your future in the New South.
Write or call today

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CAYCE, S. C.

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New and modern northern Ohio precision molded plant specializing in O-Rings—Diaphragms—Seals, etc. wants experienced compounder to head up compounding, production and research. All replies confidential. Address Box 887-W, RUBBER AGE.

LATEX CHEMIST

Progressive manufacturer of latex compounds interested in acquiring the services of an experienced latex chemist. Permanent position with good opportunity for advancement. Please send resume stating age, education, experience and salary desired. Address Box 884-W, RUBBER AGE.

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Sales Representative—technically minded to handle complete line of protective and decorative coatings for rubber products. Nationally and internationally advertised. Used the world over. Address Box 888-W, RUBBER AGE.

CHEMICAL ENGINEER: Unusual opportunity for a recent graduate to build a sound future with a progressive young management team in an expanding New England rubber company. Versatility and ability to quickly assume broad responsibility in new product and process development necessary. Experience in cellular polymers desirable but not essential. Submit resumes. Address Box 890-W, RUBBER AGE.

SALES ENGINEER

To develop and sell accounts on Eastern seaboard. Products from Silicone rubber and other synthetics. Salary basis. Mail reume. REISS MANUFACTURING CORP., Route 46, Little Falls, New Jersey.

SUPERINTENDENT for Night Shift (5 nights) Rubber Molding Plant located Eastern Penna. Must have all around experience and be able to maintain high production. If you are interested in a steady, good paying position with plenty of future opportunity, send complete resume, including salary expected. Address Box 892-W, RUBBER AGE.

SUPERVISOR for Division manufacturing hard rubber battery covers and cases. Division uses both manual and semi-automatic presses. Must have knowledge of formulation, as well as being able to operate division, supervising 25-35 employees. Give full details, together with the salary requirements. Address Box 893-W, RUBBER AGE.

HELP WANTED—Continued

BELT ENGINEER

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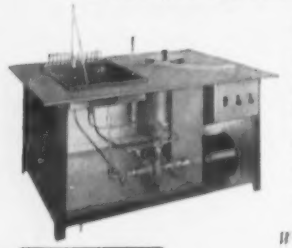

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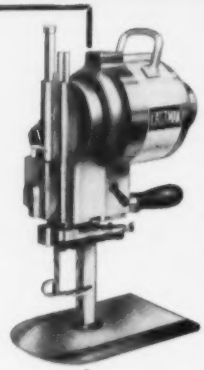

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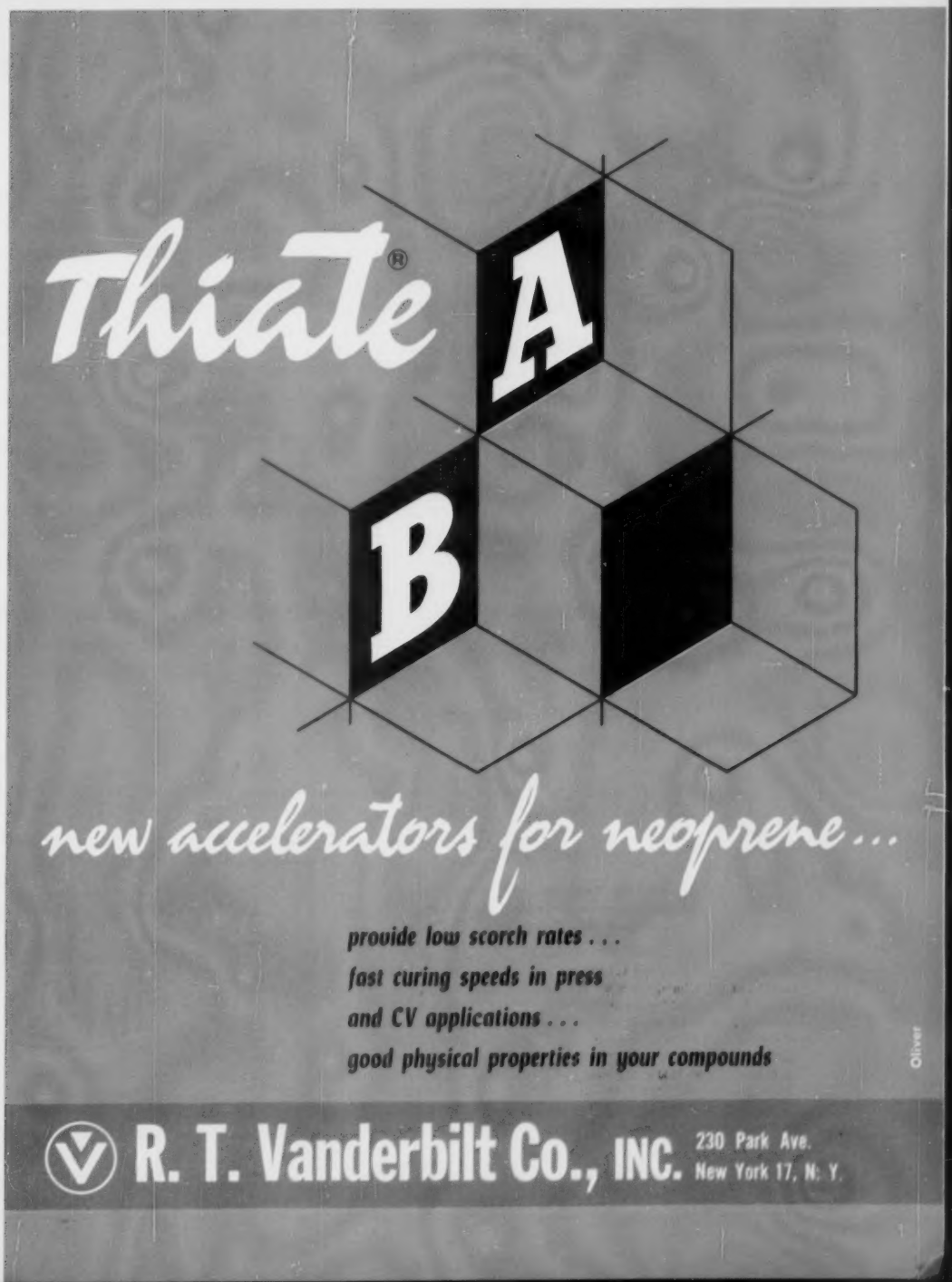
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